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WILDLIFE REVIEW

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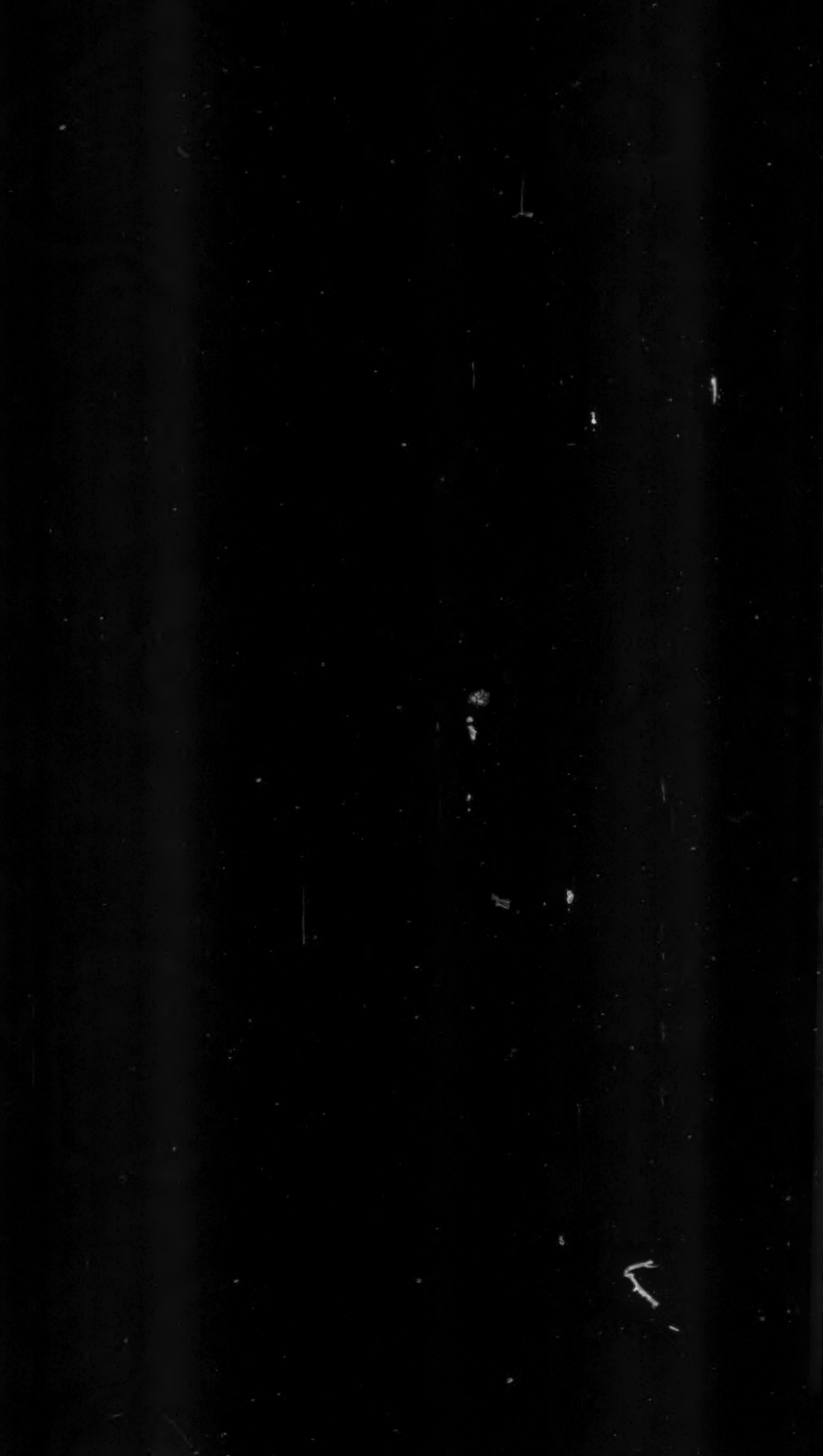

WILDLIFE REVIEW

An abstracting service for wildlife management
Issued for the information of cooperators
by the Bureau of Sport Fisheries and Wildlife
Fish and Wildlife Service
UNITED STATES DEPARTMENT OF THE INTERIOR

December 1972 Patuxent Wildlife Research Center, Laurel, Md. 20810 No. 147

Use of funds for printing this publication approved
by the Director of the Bureau of the Budget, December 1, 1970.

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Except as indicated, abstracts are by Kenneth J. Chiavetta, editor,
and Rebecca M. Ewing, editorial assistant.

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NATURAL RESOURCES & CLIMATE

Professional Training Subcommittee, Environmental Conservation Education Division, Soil Conservation Society of America. NATURAL RESOURCES AND ENVIRONMENT, 1970-71 / A BIBLIOGRAPHY. *J. Soil Water Conserv.* 27(4): 1B-8B. July-Aug. 1972. Copies of the list are for sale by the Soil Conservation Society of America, 7515 Northeast Ankeny Road, Ankeny, Iowa, at $1.00. *WR 147: 2*

Sharkey, M. J. THE CARRYING CAPACITY OF NATURAL AND IMPROVED LAND IN DIFFERENT CLIMATIC ZONES. *Mammalia* 34(4): 564-572. Dec. 1972. [From J. Mammal. 53 (2, suppl.), 1972. In (English) with French summ.] *WR 147: 2*

SOILS

Hammond, Charles L. SOIL SURVEY OF BOONE COUNTY, NEBRASKA. *U.S. Dep. Agric. Soil Conserv. Serv. Soil Surv.* 79 p., 3 figs. + 2 pls. + single-fold maps based on aerial photos and bound in. Jan. 1972. For sale by Supt. Documents, GPO, Washington, D.C. *WR 147: 2*

McIntyre, C. L. SOIL SURVEY OF DAWSON, LUMPKIN, AND WHITE COUNTIES, GEORGIA. *U.S. Dep. Agric. Soil Conserv. Serv. Soil Surv.* 105 p., 1 fig. + 6 pls. + single-fold maps based on aerial photos and bound in. Apr. 1972. For sale by Supt. Documents, GPO, Washington, D.C. *WR 147: 2*

Slama, Norman L., and others. SOIL SURVEY OF THURSTON COUNTY, NEBRASKA. *U.S. Dep. Agric. Soil Conserv. Serv. Soil Surv.* i + 64 p., 19 figs. + single-fold maps based on aerial photos and bound in. Mar. 1972. For sale by Supt. Documents, GPO, Washington, D.C. *WR 147: 2*

GENERAL CONSERVATION

Committee on Merchant Marine and Fisheries. A COMPILATION OF FEDERAL LAWS RELATING TO CONSERVATION AND DEVELOPMENT OF OUR NATION'S FISH AND WILDLIFE RESOURCES, ENVIRONMENTAL QUALITY, AND OCEANOGRAPHY. *Printed for the use of the Committee on Merchant Marine and Fisheries by the U.S. Government Printing Office, Washington, D.C.* Jan. 1972. *WR 147: 2*

"This compilation is presented in two sections: one contains the laws dealing with wildlife conservation, fisheries, and oceanography; the other contains the laws dealing with selected aspects of environmental quality."

King, David A. TOWARDS MORE EFFECTIVE NATURAL RESOURCE PLANNING. *Trans. N. Am. Wildl. Nat. Resour. Conf.* 37: 260-267. 1972. *WR 147: 3*
[Univ. Ariz., Tucson.] "We must apply the planning process in the management of natural resources to a greater degree than ever before. To accomplish this will require more planners, better planning information, better planning models, more favorable planning climates, and more coordination at all levels. In order to fulfill these requirements we will need the best efforts of everyone in the field of natural resource management: educators, researchers and administrators."

Vosburgh, John. LIVING WITH YOUR LAND. *Charles Schribner's Sons* (New York). xi + 191 p., illus., 5.75 x 8.5 in. 1968. Price $6.95 cloth, $2.65 paper. *WR 147: 3*
"A guide for persons freshly exposed to life at the city's fringe...who seek advice on the physical and biological problems encountered next door to nature.... Appropriate action to take on physical and biological problems is described in such chapters as The Site and the Soil; Water on and under Your Land; Vegetation, High and Low; Neighbors in Furs; Of Bird Life; Reptiles, Amphibians, and Fish; and The Lower Animals."

BIBLIOGRAPHIES, DIRECTORIES, BIOGRAPHY, HISTORY

Romero-Alvarez, Humberto. TRENDS ON ENVIRONMENTAL CONTROL IN MEXICO. *Trans. N. Am. Wildl. Nat. Resour. Conf.* 37: 92-99. 1972. *WR 147: 3*
[Tech. Council Against Malaria, Mexico, Mexico.] "In summary, it is believed that the situation existing in Mexico in both technical and administrative aspects, as well as the attitude of official and private sectors, lend themselves to the development of formal activities for control and improvement of the environment and such activity, judging from efforts made to date, offers a promise of successful results."

Tkachuk, E. K., compiler. [ANIMAL WORLD OF MOLDAVIA / BIBLIOGRAPHIC INDEX OF THE LITERATURE, 1917-1968.] *Izdat. "Shtiitsa"* (Kishinev). 232 p. 1971. Price 50 kopecks. In Russian. *WR 147: 3*

WILDLIFE--BIOTAS, ECOLOGY, NATURAL HISTORY

Jones, Gwilym S. VERTEBRATE ECOLOGY OF A STRIP-MINED AREA IN SOUTHERN INDIANA. *M.S. thesis, Purdue Univ.* 158 p. 1967. *WR 147: 3*

Meshzherin, V. A. [ENERGY STRUCTURE OF ZOOLOGICAL SYSTEMS.] *Ekologiya* 1(6): 52-61, illus. 1970. [From Biol. Abstr. 54(6), 1972. In Russian.] *WR 147: 3*
[T. G. Shevchenko Kiev State Univ., Kiev, USSR.]

Nobile, Philip, and John Deedy, editors. THE COMPLETE ECOLOGY FACT BOOK. *Doubleday & Co., Inc.* (Garden City, N.Y.). 472 p., illus., 5.75 x 8.5 in. 1972. Price $10.00. *WR 147: 3*
"THE COMPLETE ECOLOGY FACT BOOK attempts to bring together...hard-to-find information in a simple, comprehensive compilation of ecology statistics. From population to pesticides, from endangered animals to solid-waste disposal, the editors have culled the most recent and pertinent ecological facts from United Nations, United States Government, private industry, foundation and individual sources." Many original sources are contained in appendices.

Norderhaug, Magnar. IAKTTAGELSER OVER DYRELIVET PA SVALBARD 1970. [OBSERVATIONS OF ANIMAL LIFE IN SVALBARD 1970.] *Norsk Polarinst. Arbok* 1970: 264-270. 1972. [From Biol. Abstr. 54(4), 1972. In Norwegian with English and Russian summ.] *WR 147: 3*
Observation of 40-50 walruses *(Odobenus rosmarus)* from Kvitoya indicates that a small population still exists in Svalbard. Crane *(Grus grus)*, moorhen *(Gallinula chloropus)* and white-rumped sandpiper *(Calidris fuscicollis)* are recorded

for the first time in Svalbard. The second record from Svalbard of shoveler *(Spatula olypeata)*, Steller's eider *(Polysticta stellari)*, red-breasted merganser *(Mergus serrator)*, and short-eared owl *(Asio flammeus)* is mentioned. The first breeding record of great skua *(Catharacta skua)* from Svalbard is reported from Bjornoya. Observations of some other less common birds are summarized.

Popov, V. A., and A. V. Lukin. [THE ANIMAL WORLD OF TARTARY.] *Tatarskoe Knizhnoe Izdat.* (Kazan). 263 p., 98 figs. 1971. Price 94 kopecks. In Russian. *WR 147: 4*

Richards, A. M. AN ECOLOGICAL STUDY OF THE CAVERNICOLOUS FAUNA OF THE NULLARBOR PLAIN, SOUTHERN AUSTRALIA. *J. Zool.* 164(1): 1-60 + 5 pls. May 1971. [From *J. Mammal.* 53(2, suppl.), 1972.] *WR 147: 4*

Vtorov, P. P. [PROBLEMS IN THE STUDY OF THE TERRESTRIAL ECOSYSTEM AND ITS COMPONENT ANIMALS.] *Izdat. "Ilim"* (Frunze). 95 p. 1971. Price 37 kopecks. In Russian. *WR 147: 4*

WILDLIFE--NATURAL AREAS & REFUGES

Mikhailov, V. A., and K. A. Tatarinov. [ZOOGEOGRAPHICAL ZONATION OF HUNGARY.] *Vestn. Zool.* 4: 11-18. 1971. [From *J. Mammal.* 53(2, suppl.), 1972. In Russian with English summ.] *WR 147: 4*

Odum, Eugene P., and Howard T. Odum. NATURAL AREAS AS NECESSARY COMPONENTS OF MAN'S TOTAL ENVIRONMENT. *Trans. N. Am. Wildl. Nat. Resour. Conf.* 37: 178-189, 2 figs. 1972. *WR 147: 4*
[Univ. Ga., Athens.] Major topics of discussion: Ecosystem management model, calculating the monetary value of natural environment, and the per capita approach.

Wojterski, Teofil. PARKI NARODOWE JUGOSLAWII. [NATIONAL PARKS OF YUGOSLAVIA.] *Ochr. Przyr.* 36: 11-129, 71 figs. 1971. In Polish with English summ. *WR 147: 4*
[A. Mickiewicz Univ., Poznań, Poland.] A description of the 14 national parks of Yugoslavia totalling 235,915 ha.

WILDLIFE--NATURE PROTECTION & RARE & EXTINCT SPECIES

Banko, Winston. ENDANGERED BIRDS IN HAWAII. *Elepaio* 33(2): 11-13. Aug. 1972. *WR 147: 4*

Goodwin, Harry A. ENDANGERED AND EXTINCT WILDLIFE OF HAWAII. *Elepaio* 33(2): 14-16. Aug. 1972. *WR 147: 4*
Within the past 150 years, 24 spp. of Hawaiian birds have become extinct, and another 26 or 27 are either rare or endangered. The species are listed by both common and scientific names.

Hoffman, T. W. THE FAUNA AND FLORA PROTECTION ORDINANCE. *Loris* (Colombo) 12 (3): 169-170, 182. June 1971. [From *J. Mammal.* 53(2, suppl.), 1972.] *WR 147: 4*

Olin Conservation Department. A LAW FOR WILDLIFE. *Conserv. Dep. Winchester-Western Div., Olin* (East Alton, Ill.). 20 p. 1972. *WR 147: 4*
A model state nongame and endangered species law developed by the International Association of Game, Fish and Conservation Commissioners and The Wildlife Society.

Villa-R., Bernardo. WILDLIFE PROTECTION AND SOME INTERNATIONAL COOPERATIVE ASPECTS. *Trans. N. Am. Wildl. Nat. Resour. Conf.* 37: 69-77, 3 figs. 1972. *WR 147: 4*
[Direccion General de la Fauna Silvestre, Mexico, Mexico.] Review of the extinct and endangered animals of Mexico and of cooperation between Mexico and other New World countries on the protection of wildlife.

WILDLIFE—MORPHOLOGY, PHYSIOLOGY, BEHAVIOR, MIGRATION

Bikhovskii, B. E., chief editor. [THE MIGRATION OF ANIMALS.] *Izdat. "Nauka" Leningradskoe Otdel.* (Leningrad). 186 p., illus. 1968. Price 85 kopecks. In Russian. *WR 147: 5*

Hawking, F., Mary C. Lobban, K. Gammage, and M. J. Worms. CIRCADIAN RHYTHMS (ACTIVITY, TEMPERATURE, URINE AND MICROFILARIAE) IN DOG, CAT, HEN, DUCK, *THAMNOMYS* AND *GERBILLUS*. *J. Interdisciplinary Cycle Res.* 2(4): 455-473. Dec. 1971. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 5*

Rajasingh, S. G., and I. V. Rajasingh. BIRDS AND MAMMALS EATING THE FRUIT OF THE YELLOW OLEANDER *THEVETIA PERUVIANA*. *J. Bombay Nat. Hist. Soc.* 67: 572-573. 1970. [From Ibis 114(3), 1972.] *WR 147: 5*

WILDLIFE—POLLUTION

Adley, Frank E., and Donald W. Brown. MERCURY CONCENTRATIONS IN GAME BIRDS, STATE OF WASHINGTON—1970 AND 1971. *Pestic. Monit. J.* 6(2): 91-93. Sept. 1972. *WR 147: 5*

[Hanford Environ. Health Foundation, P.O. Box 100, Richland, Wash.] Abstract: In a survey to determine the presence of mercury in the liver of game birds, 246 specimens contributed by local hunters during October 1970 to January 1971 and 4 obtained in May 1971 were analyzed. The species included pheasant, quail, chukar partridge, duck, geese, and grouse. Muscle samples were submitted with some of the liver specimens and, in those instances, these tissues also were analyzed. The highest average mercury concentrations were in livers from mergansers (11.67 ppm) and teal (0.29 ppm), species with diets including aquatic organisms and thus differing from the other samples. The average mercury levels in liver from the other species were 0.08 ppm in pheasant; 0.03 ppm, quail; 0.06 ppm, chukar partridge; 0.12 ppm, ducks (other than teal and mergansers); 0.16 ppm, geese; and 0.02 ppm, grouse. On the species with both muscle and liver tissue analyzed, quail had the highest muscle to liver ratios of mercury and mergansers, the lowest. In view of the practice of fall seeding with mercury-dressed seeds, the importance of the period of exposure to the treated seeds was investigated. No apparent correlation was evident between liver concentrations and the time of year the birds were killed.

Baetcke, Karl P., Jimmie D. Cain, and William E. Poe. MIREX AND DDT RESIDUES IN WILDLIFE AND MISCELLANEOUS SAMPLES IN MISSISSIPPI—1970. *Pesticides Monit. J.* 6(1): 14-22. June 1972. *WR 147: 5*

[Miss. State Univ., State College.] Abstract: Samples of wildlife and a few miscellaneous samples, such as beef, were collected in Mississippi in 1970 and analyzed for the presence of mirex and DDT and its analogs. Levels of mirex residues were found to range from 0 ppm to a high of about 104 ppm; residues of DDT and its metabolites (DDTR = DDT + DDE + DDD) were found to range from <0.001 ppm to 126 ppm. Comparisons of the amounts of the two pesticides found in individual samples showed that mirex residues often exceeded DDT residues. Collections of wildlife were begun in the spring of 1970, one year after mirex had been applied by aerial application in the primary study area. The high levels of mirex residues found in some of these samples one year after treatment indicate that mirex can be considered a persistent pesticide.

Berg, W., A. Johnels, B. Sjöstrand, and T. Westermark. MERCURY CONTENT IN FEATHERS OF SWEDISH BIRDS FROM THE PAST 100 YEARS. *Oikos* 17: 71-83, 12 figs. 1966. *WR 147: 5*

[Swedish Mus. Nat. Hist., Stockholm, Sweden.] *Phasianus colchicus, Perdix perdix, Lagopus lagopus, Falco peregrinus, Haliaetus albicilla* and a small material of *Emberiza calandra, Asio otus, Strix aluco, Buteo buteo,* and *Circus cyaneus*. The material, drawn from skins and mounted specimens in Swedish collections, and from living or freshly killed birds, covers a period of more than the past hundred years. Possible sources of post mortem contamination of

the specimens are discussed. Allowance being made for such cases, the activation method as applied to the analysis of mercury in feathers appears reliable: Roughly constant Hg levels are encountered in each of the investigated species during the period 1840-1940, although with considerable variation between the species. Differences of position within the food chains seem to be the main cause of the differences in Hg level between species. A well-documented increase of Hg concentration, amounting to at least 10-20 times the previous level, appears in the 1940's and 1950's, with some time-differences between the species in the available material. The appearance of increased mercury accumulations in birds mainly in the beginning of the 1940's indicates that alkyl-Hg compounds used as seed dressings are chiefly responsible for that increase.--From abstr.

Brewerton, H. DDT IN FATS OF ANTARCTIC ANIMALS. *New Zealand J. Sci.* 12(2): 194-199. 1969. [From Bird-Banding 42(4), 1971.] *WR 147: 6*

Concentration of DDT in Adelie penguins, *Pygoscelis adelinae*, 2-to-7 times that in Weddell seals, and six times higher in penguins near research stations, Ross Island, than in those from Cape Hallett, 400 miles distant.

Burrage, R. H., and J. G. Saha. INSECTICIDE RESIDUES IN PHEASANTS AFTER BEING FED ON WHEAT SEED TREATED WITH HEPTACHLOR AND ^{14}C-LINDANE. *J. Econ. Entomol.* 65 (4): 1013-1017. Aug. 1972. *WR 147: 6*

[Univ. Saskatchewan, Saskatoon, Saskatchewan, Canada.] Abstract: Different amounts of heptachlor-treated wheat seed containing 365 ppm heptachlor and 105 ppm *trans*-chlordane were fed to pheasants for different lengths of time, and residues in muscle, liver, brain and fatty tissues were determined at various times later. In general, residues of heptachlor epoxide (HE) in body tissues were related to the number of treated seed fed and the length of feeding time. Pheasants that were fed only 5 treated seed/day for 15 days had 0.17-0.23 ppm and 1.16-1.60 ppm HE in liver and fat, respectively, 14 days later. Feeding of 10 or 20 seed/day for 15 days resulted in higher levels of residues in all tissues. Consumption of only 5 or 20 treated seed by the pheasants in 1 day resulted in only 0.02 to 0.06 ppm HE in liver even after 14 days. Pheasants that were fed as many treated seed as they would eat (700-1240 seed or 9.9-17.5 mg of toxicant) in 1 day had very high levels (up to 32.5 ppm in fat) of residues 1 day later. Although residue levels of all tissues decreased with time, about 1.0 ppm and up to 0.07 ppm HE was present in fat and muscle, respectively, even after 90 days. Pheasants that were fed as many ^{14}C-lindane-treated seed as they would eat (525-860 seed or 9-14.8 mg of toxicant) in 1 day had up to 1.12 and 2.48 ppm residue in muscle and liver, respectively, 1 day later. But these levels decreased very rapidly, and no residue could be detected even after 14 days. It is suggested that lindane seed dressings are less hazardous to seed-eating birds than heptachlor seed dressings and that the use of heptachlor should be discontinued.

Cooke, A. S. UPTAKE OF DDT AND DDE BY THE QUAIL AND CHICK. *Pestic. Sci.* 2: 144-147. 1971. [From Ibis 114(3), 1972.] *WR 147: 6*

Croxall, J. P. GUILLEMOTS KILLED BY FLUORIDE? *Marine Pollution Bull.* 3(10): 149-152, 4 figs. Oct. 1972. *WR 147: 6*

[Univ. Newcastle-Upon-Tyne, Newcastle-Upon-Tyne, England.] "Guillemots are particularly subject to losses from oil pollution. Recent casualties on the Northumberland coast suggest that they are now exposed to a new hazard. The symptoms they displayed are probably consistent with fluoride poisoning and nearly all the birds were found in the neighbourhood of a new aluminium smelter. Suspicion has fallen on it as the source of fluoride in the sea, but on the whole this seems unlikely."

Dahlgren, Robert Bernard. EFFECTS OF POLYCHLORINATED BIPHENYLS IN THE RING-NECKED PHEASANT. *Ph.D. thesis, S. Dak. State Univ.* 86 p. 1972. [From Diss. Abstr. Int. B Sci. Eng. 33(3), 1972.] *WR 147: 6*

"Phasianus colchicus."

Dahlgren, Robert B., Raymond L. Linder, and W. L. Tucker. EFFECTS OF STRESS ON PHEASANTS PREVIOUSLY GIVEN POLYCHLORINATED BIPHENYLS. *J. Wildl. Manage.* 36 (3): 974-978. July 1972. *WR 147: 7*

[S. Dak. Coop. Wildl. Res. Unit, Brookings.] Abstract: Adult hen pheasants *(Phasianus colchicus)* that received 16 capsules each containing 50 mg of polychlorinated biphenyls (PCB), Aroclor 1254, once a week, and those given seven capsules each containing 50 mg of PCB at 3.5-day intervals, were alternately starved for two or three days and then fed for two days. Controls treated similarly lived longer than birds treated with PCB. Brain residues of PCB in treated birds were considerably higher (highest > 240 ppm) in birds stressed by starvation when compared with PCB-treated birds that were not starved (highest 24 ppm). Stresses that cause loss of weight can be dangerous to birds having a body burden of PCB.

Flickinger, Edward L., and Kirke A. King. SOME EFFECTS OF ALDRIN-TREATED RICE ON GULF COAST WILDLIFE. *J. Wildl. Manage.* 36(3): 706-727, 1 fig. July 1972. *WR 147: 7*

[Bur. Sport Fisheries & Wildl., Victoria, Tex.] Abstract: Wildlife casualties from aldrin-dieldrin poisoning are associated with the planting of aldrin-treated rice seed along the Texas Gulf Coast. The fulvous tree duck *(Dendrocygna bicolor)* which depends on the rice field habitats and is highly susceptible to aldrin-dieldrin poisoning, is suffering a serious population decline in that area. Dead waterfowl, shorebirds, and passerines were collected on study areas in Wharton, Brazoria, and Chambers counties, Texas, from 1967 through 1971. Residues of aldrin or dieldrin were found in all samples of bird casualties and in all eggs, scavengers, predators, fish, frogs, invertebrates, and soils. Fulvous tree ducks appeared to be less resistant to aldrin than other ducks. Dieldrin residues in brains of dead fulvous tree ducks were low, but whole-body residues were as high as 16 ppm. Brains of other dead ducks and geese averaged 10 ppm dieldrin. Some dead birds were exposed by eating treated rice seed, but many dead birds with high dieldrin residues were species that feed largely on invertebrates. Although soil residues were low, snails and crayfish contained enough aldrin and dieldrin (average 9.5 ppm) to account for deaths in birds that fed heavily on these invertebrates over a period of time. When fulvous tree ducks were penned for three days in fields aerially planted with treated seed, three of 10 birds died with brain residues of 2.5, 2.9, and 6.8 ppm dieldrin, and others were intoxicated. None of eight died, and some gained weight, when penned in fields planted with untreated seed. This study adds further evidence for the suspected lethal effects of aldrin-treated rice seed on wild birds and other wildlife in rice field habitats.

Hannon, Michael Robert. DISTRIBUTION AND PHYSIOLOGICAL EFFECTS OF DDT, DDD AND DDE IN PENNED DOUBLE-CRESTED CORMORANTS *(PHALACROCORAX A. AURITUS)*. *Ph.D. thesis, S. Dak. State Univ.* 60 p. 1972. [From Diss. Abstr. Int. B Sci. Eng. 33(3), 1972.] *WR 147: 7*

Levels, distribution and excretion of DDT, DDD and DDE were determined in tissues of penned cormorants administered doses of 2, 5 and 10 mg of total DDT and metabolites (40% DDT, 30% DDD and 30% DDE) daily in their diet, approximately, 5, 12 and 25 ppm. Analysis of residues was by electron capture gas chromatography.--From abstr.

Hudson, Rick H., Richard K. Tucker, and M. A. Haegele. EFFECT OF AGE ON SENSITIVITY: ACUTE ORAL TOXICITY OF 14 PESTICIDES TO MALLARD DUCKS OF SEVERAL AGES. *Toxicol. Appl. Pharmacol.* 22(4): 556-561, 1 fig. Aug. 1972. *WR 147: 7*

[Denver Wildl. Res. Cent., Denver, Colo.] Abstract: Acute po LD50 values for 14 common pesticides (4 central nervous system stimulants and 10 anticholinesterases) were determined on mallard ducks *(Anas platyrhynchos)* aged 36 hr., 7 days, 30 days and 6 mo. The youngest mallards were more sensitive than the oldest to 6 compounds and less sensitive to 8. The extremes in susceptibility to a compound between age groups were generally less than 3-fold. The 4 central nervous system stimulants produced LD50 values that decreased

from 36 hr. to 7 or 30 day old animals, and increased from animals aged 7 or 30 days to 6 mo. Eight of the 10 anticholinesterase compounds produced LD50 values that increased from 36 hr. to 7 or 30 days to 6 mo. The results indicate that young animals are not always more susceptible to pesticides than adults of a species. It is recommended that age-susceptibility factors be considered in the development of standardized toxicological protocols.

Ilenko, A. I. [SOME TRENDS IN ACCUMULATION OF ARTIFICIAL RADIOACTIVE ISOTOPES BY BIRDS OF THE FOREST BIOCENOSE.] *Zool. Zh.* 49(12): 1884-1886. 1970. [From Bird-Banding 42(3), 1971. In Russian with English summ.] *WR 147: 8*

In an area artificially contaminated by strontium-90, 1.8:3.4 microcuries per 1 m^2, and cesium-137, 4.8 microcuries per 1 m^2, their accumulation in 14 passerine species and in the wryneck, *Jynx torquilla*, white-backed woodpecker, *Dendrocopos leucotos*, nightjar, *Caprimulgus europaeus*, Black grouse, *Lyrurus tetrix*, kestrel, *Falco tinnunculus*, tawny owl, *Strix aluco*, and long-eared owl, *Asio otus*, in stomach contents, skeleton, and muscles, was determined.

Joensen, Anders Holm. OIL POLLUTION AND SEABIRDS IN DENMARK, 1935-1968. *Danish Rev. Game Biol.* 6(7). 22 p., 6 figs. 1972. In English with Danish and Russian summ. *WR 147: 8*

[Game Biol. Sta., Kalø, Rønde, Denmark.] Oil pollution in Danish waters and its effect on birds during the period 1935-1968 are described.

Joensen, Anders Holm. STUDIES ON OIL POLLUTION AND SEABIRDS IN DENMARK, 1968-1971. *Danish Rev. Game Biol.* 6(9). 32 p., 3 figs. 1972. In English with Danish and Russian summ. *WR 147: 8*

[Game Biol. Sta., Kalø, Rønde, Denmark.] In addition to general recording of cases of oil pollution, detailed studies have been made of five large disasters. Further information has been obtained through a questionnaire survey of hunters. —From intro.

Joiris, C., and P. Martens. TENEUR EN PESTICIDES D'OEUFS DE RAPACES RÉCOLTÉS EN BELGIQUE EN 1969. [CONTENTS OF PESTICIDES IN RAPTOR EGGS COLLECTED DURING 1969 IN BELGIUM.] *Aves* 8: 1-13. 1971. [From Ibis 114(3), 1972. In French with English summ.] *WR 147: 8*

Analysis for levels of 11 different pesticide compounds in eggs of the buzzard *Buteo buteo*, sparrowhawk *Accipiter nisus*, kestrel *Falco tinnunculus*, barn owl *Tyto alba*, Tengmalm's owl *Aegolius funereus*, little owl *Athene noctua* and tawny owl *Strix aluco*.

Koeman, J. H., J. H. Pennings, J. J. M. DeGoeij, P. S. Tjioe, P. M. Olindo, and J. Hopcraft. A PRELIMINARY SURVEY OF THE POSSIBLE CONTAMINATION OF LAKE NAKURU IN KENYA WITH SOME METALS AND CHLORINATED HYDROCARBON PESTICIDES. *J. Appl. Ecol.* 9(2): 411-416, 1 fig. Aug. 1972. *WR 147: 8*

[Inst. Vet. Pharmacol. & Toxicol., Utrecht, Netherlands.] Summary: The results of this survey show that, in the period of sampling, chlorinated hydrocarbon pesticides and six selected metals very probably did not represent a hazard to the fish and birds [*Phalacrocorax africanus, Phoeniconaias minor, Pelecanus onocrotalus* and *Platalea alba*] in Lake Nakuru. It was mentioned, however, that with respect to zinc and copper a more detailed study will be required in order to measure the toxicity of these elements alone and in combination under the peculiar environmental conditions of this soda-lake. This type of information will be needed for the evaluation of tolerance limits with regard to pollution problems which may arise in the future. The data presented in this paper provide useful baseline information for monitoring future trends of pollution in this part of the world.

Koivusaari, Juhani, Arvo Laamanen, Ismo Nuuja, Risto Palokangas, and Veikko Vihko. NOTES ON THE CONCENTRATIONS OF SOME ENVIRONMENTAL CHEMICALS IN THE EGGS OF THE WHITE-TAILED EAGLE AND THE OSPREY IN THE QUARKEN AREA OF THE GULF OF BOTHNIA. *Work-Environ.-Health* 9(1): 44-45, 1 fig. 1972. *WR 147: 9*
[Univ. Jyväskylä, Jyväskylä, Finland.] Abstract: In the Quarken area rather high concentrations of environmental poisons were measured in the eggs of the white-tailed eagle, and similar poisons were traced in the eggs of the osprey, but in lower concentrations. It seems that particularly the eagle population will hence diminish in the near future, and nature conservation activities should therefore be increased.

Leedy, Robert R. THE STATUS OF PRAIRIE FALCON IN WESTERN MONTANA: SPECIAL EMPHASIS ON POSSIBLE EFFECTS OF CHLORINATED HYDROCARBON INSECTICIDES. *M.S. thesis, Univ. Mont.* vi + 96 p., 3 figs. 1972. *WR 147: 9*
In a western Montana study 83% of all prairie falcon *(Falco mexicanus)* eyries discovered were located between 4,000 and 6,000 feet above sea level. Most eyries faced south or east, and those in potholes, caves, and in vertical cracks were sheltered from most weather. Prairie falcons in western Montana as a whole are not suffering from significant reproductive failure due to thin eggshells; however, eggs from eyries that hatched no young had shells that were thinner (0.272 mm) than the shells (0.318 mm) from eyries that hatched one or more young. The correlation coefficient between eggshell thickness and total residues of organochlorine compounds is 0.786. This highly significant ($P < .005$) negative correlation suggests that chlorinated hydrocarbons probably caused the eggshell thinning found regionally in western Montana. The low correlation between DDE and eggshell thinning may be due to small sample size or to the possibility that residues other than DDE may be factors in the thinning of eggshells.--From summ.

Martin, William E. MERCURY AND LEAD RESIDUES IN STARLINGS--1970. *Pestic. Monit. J.* 6(1): 27-32, 1 fig. June 1972. *WR 147: 9*
[Bur. Sport Fisheries & Wildl., Washington, D.C.] Abstract: Starling *(Sturnus vulgaris)* samples from 125 randomly selected sites were analyzed for mercury residues. Except for three locations, all samples had residues well below 0.5 ppm. Lead residues were identified in all samples from 23 survey sites that had been tentatively selected to evaluate use of starlings as a biological measure of environmental contamination by lead. Residues of lead ranged from 0.4 to 13.3 ppm with a mean of 3.18 ppm and a standard error of 0.62 ppm.

Martin, William E., and Paul R. Nickerson. ORGANOCHLORINE RESIDUES IN STARLINGS--1970. *Pestic. Monit. J.* 6(1): 33-40, 1 fig. June 1972. *WR 147: 9*
[Bur. Sport Fisheries & Wildl., Washington, D.C.] Abstract: As part of the National Pesticide Monitoring Program, starlings were collected in November and December 1970 from 125 sites throughout the contiguous United States and analyzed for certain persistent organochlorine insecticides. DDT and its metabolites, dieldrin, heptachlor epoxide, and benzene hexachloride were found in all samples. Polychlorinated biphenyls, which were estimated using Aroclor 1254 as a standard, were also found in all samples. A comparison of 1970 residue data with baseline information from 1967-68 indicates an apparent decline in levels of DDT and its metabolites and dieldrin; however, the decline is not significant at the 95% confidence level.

Oberheu, John C. THE OCCURRENCE OF MIREX IN STARLINGS COLLECTED IN SEVEN SOUTHEASTERN STATES--1970. *Pestic. Monit. J.* 6(1): 41-42. June 1972. *WR 147: 9*
[Bur. Sport Fisheries & Wildl., Atlanta, Ga.] Abstract: Selected samples of starlings collected for the National Pesticides Monitoring Program were analyzed for mirex, the chemical used for eradication of the imported fire ant. Whole bodies (less skin, beak, feet, and outer wings) of 10 birds from each sampling site were pooled for analysis. Residues present in 10 of the 12 sample pools ranged from 0.01 to 1.66 ppm.

Robel, R. J., C. D. Stalling, M. E. Westfahl, and A. M. Kadoum. EFFECTS OF INSECTICIDES ON POPULATIONS OF RODENTS IN KANSAS--1965-69. *Pestic. Monit. J.* 6 (2): 115-121, 1 fig. Sept. 1972. *WR 147: 10*

[Kans. State Univ., Manhattan.] Six insecticides (diazinon, endrin, heptachlor, parathion, methyl parathion, and aldrin) were applied on one field, while a second field served as a control. Insecticidal residues were detected in 36 of the 162 specimens of rodents analyzed. Dieldrin residues were detected in 33 specimens and heptachlor epoxide in 8 specimens (5 of these specimens had residues of both dieldrin and heptachlor epoxide). These residue levels were low with no dieldrin levels in specimens exceeding 0.50 ppm, and no heptachlor epoxide levels exceeding 0.02 ppm. No residues of the other four insecticides were detected in any of the specimens. The slight differences in dynamics of the rodent populations on the two areas could easily have been due to chance, minor differences between the two study areas, or differential emigration of specimens from the areas as well as direct or indirect effects of insecticidal applications.--From abstr.

Rudnev, D. F., and N. E. Kononova. [NATURE AND PESTICIDES.] *Izdat. "Leanaya Promishlennost"* (Moscow). 141 p. 1971. Price 53 kopecks. In Russian. *WR 147: 10*

Shepard, Harold H. 1972 DICTIONARY OF PESTICIDES. [FARM CHEMICALS HANDBOOK, SECTION C.] *Meister Publ. Co.* (Willoughby, Ohio). p. C139-C306. 1972. Price $5.00, paper. *WR 147: 10*

"The Pesticide Dictionary is a compilation of pesticidal compounds used now or in the past in the United States and around the world, with pertinent definitions. Names of the basic producers are listed under those pesticides available commercially." In most cases the information about each pesticide is given under the following headings: chemical name, principal isomer present, medical and pharmaceutical name, other names, history, action, chemical properties, toxicity, applications, and formulations.

Spann, J. W., R. G. Heath, J. F. Kreitzer, and L. N. Locke. ETHYL MERCURY P-TOLUENE SULFONANILIDE: LETHAL AND REPRODUCTIVE EFFECTS ON PHEASANTS. *Science* 175(4019): 328-331. 21 Jan. 1972. *WR 147: 10*

[Patuxent Wildl. Res. Cent., Laurel, Md.] Abstract: Ethyl mercury *p*-toluene sulfonanilide (active ingredient of Ceresan M) at a dietary concentration of 30 parts per million (12.5 parts of mercury per million) was lethal to adult ring-necked pheasants. Egg production and survival of third-week embryos were sharply reduced when breeders were maintained on feed containing 10 parts of this compound per million (4.2 parts of mercury per million).

Van Velzen, Aldeen C., Wilbur B. Stiles, and Lucille F. Stickel. LETHAL MOBILIZATION OF DDT BY COWBIRDS. *J. Wildl. Manage.* 36(3): 733-739. July 1972. *WR 147: 10*

[Patuxent Wildl. Res. Cent., Laurel, Md.] Abstract: This study is an experimental demonstration of lethal mobilization of DDT by brown-headed cowbirds *(Molothrus ater)* and the effects of food deprivation on the distribution and loss of DDT, DDD, and DDE. The principal experimental group consisted of 20 birds fed a dietary dosage of 10 ppm of DDT for 13 days. After 2 days of full rations of untreated food, they were subjected to food restriction. Food was reduced to 43 percent of normal. Seven of the 20 birds died within 4 days. No birds died in the three control groups, treated as follows: (1) 20 birds fed 100 ppm DDT for 13 days and full rations of untreated food thereafter, (2) 20 birds fed only untreated food but subjected to food restriction, and (3) 20 birds fed full rations of untreated food throughout. In a pilot study, birds were fed 100, 200, or 300 ppm of DDT and subjected to two periods of food restriction, the first of these immediately after dosage ceased and the second 4 months later. DDT-dosed birds from all dosage levels died in each period of food restriction. Before the weight loss that accompanied food restriction, the brains of DDT-dosed birds had concentrations of DDT and DDD that were far below the lethal range.

Concentrations increased rapidly to lethal levels. In these birds, DDT in carcasses decreased while DDD increased. DDT-dosed birds that died during food restriction lost 16 percent of their total body burden of DDT + DDD + DDE, 21 percent of their weight, and 81 percent of their fat. The DDT-dosed birds that were subjected to food restriction but survived lost a significantly greater proportion of their body burden of residues than similarly dosed birds not subjected to weight loss. Brain levels of DDT and DDD in birds that died during food restriction soon after dosage did not differ significantly from brain levels of birds that died in a period of food restriction four months after dosage. Concentrations of DDE were significantly higher in the latter group, although they were lower than concentrations considered to be lethal. In contrast, carcass levels of DDT and DDD were significantly lower, and DDE was only slightly higher, in the birds that died in the second period of food restriction. It is concluded that stored DDT residues present a hazard to birds, which utilize stored fat during periods of stress due to reproduction, cold weather, disease, injury, limited food supply, or migration.

Wiemeyer, Stanley N., Bernard M. Mulhern, Frank J. Ligas, Richard J. Hensel, John E. Mathisen, Fred C. Robards, and Sergej Postupalsky. RESIDUES OF ORGANOCHLORINE PESTICIDES, POLYCHLORINATED BIPHENYLS, AND MERCURY IN BALD EAGLE EGGS AND CHANGES IN SHELL THICKNESS--1969 AND 1970. *Pestic. Monit. J.* 6(1): 50-55. June 1972. *WR 147: 11*

[Patuxent Wildl. Res. Cent., Laurel, Md.] Abstract: Twenty-three bald eagle eggs collected in Alaska, Maine, Michigan, Minnesota, and Florida during 1969 and 1970 were analyzed for organochlorine pesticides, polychlorinated biphenyls, and mercury. All eggs contained residues of DDE, dieldrin, PCB's, and mercury. Average residue concentrations were lowest in eggs from Alaska. Significant eggshell thinning has occurred among eggs from most major areas sampled. Some eggs contained DDE residues of the same magnitude as those that produced shell thinning in experimental species. High dieldrin residues in some eggs could be having an adverse effect on reproductive success.

Zook, B. C., R. M. Sauer, and F. M. Garner. LEAD POISONING IN CAPTIVE WILD ANIMALS. *J. Wildl. Dis.* 8(3): 264-272. July 1972. *WR 147: 11*

[George Washington Univ., Washington, D.C.] Lead poisoning was diagnosed post-mortem in 34 simian primates, 11 parrots, and three Australian fruit bats at the National Zoological Park.--From abstr.

WILDLIFE--PARASITES & DISEASES

Gvozdev, E. V., editor. [PARASITOLOGICAL NEWS IN KAZAKHSTAN.] *Akad. Nauk Kazakhskoi SSR, Trudy Inst. Zool.* 31. 203 p., illus. 1971. Price 1 ruble, 95 kopecks. In Russian. *WR 147: 11*

Hubert, William T. YERSINIOSIS IN MAMMALS AND BIRDS IN THE UNITED STATES / CASE REPORTS AND REVIEW. *Am. J. Trop. Med. Hyg.* 21(4): 458-463. 1972. *WR 147: 11*

[Agric. Res. Serv., U.S. Dept. Agric., Ames, Iowa.] Abstract: *Yersinia pseudotuberculosis* infection has been reported in the United States in six species of domestic mammal (cat, cow, goat, rabbit, sheep, and swine), five species of wild mammal including black-tailed jack rabbit (*Lepus californicus*), white-tailed antelope squirrel (*Citellus leucurus*), eastern cottontail (*Sylvilagus floridanus*), black-faced kangaroo (*Macropus melanops*), and albino fallow deer (*Dama dama*), and three birds (canary, dove, and pigeon). Also, epizootics in chinchilla caused by *Yersinia enterocolitica* have been recorded in the United States. The importance of intestinal carriers in fecal-oral spread of infection is emphasized in the epizootiology of yersiniosis (infection with *Y. pseudotuberculosis* or *Y. enterocolitica*). Wild birds and rodents appear to be significant reservoirs of *Y. pseudotuberculosis*, but birds have not been found infected with *Y. enterocolitica*.

Lewis, James C. FACTORS INFLUENCING REPORTS OF RABID ANIMALS IN OKLAHOMA. *J. Wildl. Dis.* 8(3): 245-251. July 1972. *WR 147: 12*

[Okla. Coop. Wildl. Res. Unit, Stillwater.] Abstract: Linear regressions were calculated to evaluate the distribution of reports of rabid animals and some of the factors that might influence reporting rates in Oklahoma. There was a significant relationship between the distribution of human populations and reports of rabid animals other than cattle and skunks. There was no evidence that the presence of the livestock industry per se had an influence on reporting rates. Distance to the laboratory was apparently a factor influencing submission of heads of cattle and skunks, but not other rabid animals. Reporting rates for rabid skunks are probably poor and those reported may represent only a small fraction of actual numbers. Reports of rabid pets, and to a lesser extent rabid cattle, are probably better biological indicators of the true distribution and intensity of the skunk rabies problem. These reports indicate that problem areas for rabies in Oklahoma, where skunks are the primary rabies vector, are characterized by high indices of habitat diversity.

Machinskii, A. P., and V. N. Semov. [TRICHINOSIS OF WILD ANIMALS IN MORDOVIA.] *Med. Parazitol. Parazit. Bolezn* 40(5): 532-534. 1971. [From Biol. Abstr. 54(2), 1972. In Russian with English summ.] *WR 147: 12*

Navarathnam, E. S. AN ACCOUNT OF THE GENUS *PENTATRICHOMONAS* MESNIL, 1914 FROM THE INDIAN BIRDS AND MAMMALS. *Rev. Parasitol.* (Rome) 31(2): 99-106. June 1970. [From J. Mammal. 53(2, suppl.), 1972. In (English) with Italian summ.] *WR 147: 12*

Scholtens, R. T., and G. Caroli. ROLE OF PIGEONS IN THE SPREAD OF SALMONELLOSIS: INCIDENCE OF DIFFERENT TYPES OF *SALMONELLA TYPHI-MURIUM* VAR. *COPENHAGEN* IN PIGEONS, MAN, AND OTHER ANIMALS. *Antonie Leeuwenhoek J. Microbiol. Serol.* 37 (4): 473-476. 1971. [From Biol. Abstr. 54(1), 1972.] *WR 147: 12*

[Natl. Inst. Publ. Health, Utrecht, Netherlands.]

Skrjabin, K. I., N. P. Shikhobalova, and R. S. Shul'ts. DICTYOCAULIDAE, HELIGMOSOMATIDAE, AND OLLULANIDAE OF ANIMALS / ESSENTIALS OF NEMATODOLOGY. VOL. IV. *Published for the U.S. Department of Agriculture and the National Science Foundation, Washington, D.C., by the Israel Program for Scientific Translations* (Jerusalem). TT 70-50168. v + 316 p., 308 figs. 1971. Russian original by the Academy of Sciences of the USSR in 1954. [Translation available from the U.S. Dep. Commerce, National Technical Information Service, Springfield, Va.] *WR 147: 12*

Skrjabin, K. I., A. A. Sobolev, and V. M. Ivashkin. SPIRURATA OF ANIMALS AND MAN AND THE DISEASES CAUSED BY THEM. PART 4 THELAZIOIDEA / ESSENTIALS OF NEMATODOLOGY. VOL. XVI. *Published for the U.S. Department of Agriculture and the National Science Foundation, Washington, D.C., by the Israel Program for Scientific Translations* (Jerusalem). TT 70-50167. vi + 610 p., 397 figs. 1971. Russian original by the Academy of Sciences of the USSR in 1967. [Translation available from the U.S. Dep. Commerce, National Technical Information Service, Springfield, Va.] *WR 147: 12*

Wilson, Nixon, and W. Wilson Baker. TICKS OF GEORGIA (ACARINA: METASTIGMATA). *Bull. Tall Timbers Res. Sta.* no. 10. 29 p. Jan. 1972. *WR 147: 12*

Species are described by their geographic locations and by their hosts. Records of each species in Georgia are noted. A "Host-Tick Index For Georgia" is included as an appendix. Study of 3,136 ticks comprising 371 individual collections of 15 spp. and one species group and review of literature, indicated 21 spp. occur in Georgia at this time.--From abstr.

WILDLIFE--POPULATIONS & FLUCTUATIONS

Fedorov, V. [FEATURES OF BIOLOGICAL SYSTEMS' ORGANIZATION AND A HYPOTHESIS FOR "IRRUPTIONS" OF SPECIES IN A COMMUNITY.] *Vestn. Mosk. Otd. Biol.* 25(2): 71-81. 1970. [From Bird-Banding 43(1), 1972.] *WR 147: 13*

Hauser, R. WILDLIFE CYCLES. *Cycles* 23(1): 25. Jan. 1972. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 13*

Watson, A., and R. Moss. DOMINANCE, SPACING BEHAVIOR AND AGGRESSION IN RELATION TO POPULATION LIMITATION IN VERTEBRATES. *Symp. British Ecol. Soc.* 10: 167-220. 1970. [From Bird-Banding 42(3), 1971.] *WR 147: 13*
"This paper serves as a useful guidepost in the study of population limitation in vertebrate animals, summing up the state of the subject at present and pointing out directions for progress to take."

WILDLIFE--BIOMETRICS

Gaskell, T. J., and B. J. George. A BAYESIAN MODIFICATION OF THE LINCOLN INDEX. *J. Appl. Ecol.* 9(2): 377-384, 2 figs. Aug. 1972. *WR 147: 13*
[Paisley Coll. Technol., Paisley, Scotland.] Summary: In this paper an alternative to the Lincoln Index is developed and its advantages demonstrated with the aid of a computer simulation. The new formula takes account of the experimenters' prior estimate of the population size and his credence measure for that estimate. Charts are presented, to enable 'safe' working limits to be obtained.

Kudrin, A. I. [SOME QUANTITATIVE INDICES USED IN TREATMENT OF ANIMAL POPULATIONS.] *Zool. Zh.* 50(12): 1861-1864. 1971. [From Biol. Abstr. 54(3), 1972. In Russian with English summ.] *WR 147: 13*

WILDLIFE--TECHNIQUES

Berg, David S., and Ronald Baenninger. A DEVICE FOR RECORDING AGGRESSIVE CONTACT BETWEEN ANIMALS. *Behav. Res. Methods Instrum.* 4(1): 39, illus. 1972. [From Biol. Abstr. 54(2), 1972.] *WR 147: 13*
[Temple Univ., Philadelphia, Pa.]

Buffington, Charles Duane. AN ANALYSIS OF THE DECISION-MAKING SYSTEMS WITHIN THE NATIONAL WILDLIFE REFUGE SYSTEM. *Ph.D. thesis, Va. Polytechnic Inst. State Univ.* 197 p. 1972. [From Diss. Abstr. Int. B Sci. Eng. 33(3), 1972.] *WR 147: 13*
A methodology is presented for the analysis of the decision making process and inputs needed in wildland resource agencies. The concepts and methods have general application; their particular use is demonstrated for the National Wildlife Refuge System.

Christie, Donald K., and Robert G. Young. MIDAS--A TOOL FOR NATURAL RESOURCE DATA MANAGEMENT. *Trans. N. Am. Wildl. Nat. Resour. Conf.* 37: 222-233, 2 figs. 1972. *WR 147: 13*
[Maine Inland Fisheries & Game Dep., Augusta.] "In summary, MIDAS [Main Information Display Analysis System] represents a versatile tool for the administrator, planner, or research specialist who is seeking facts in his attempt to shape and direct the future use and perpetuation of our vital natural resources."

Holter, Marvin R., and others. REMOTE SENSING OF THE CHESAPEAKE BAY. *NASA* SP-294. 179 p., illus. 1972. For sale by Supt. Documents, GPO, Washington, D.C., at $2.25. *WR 147: 13*
Topics discussed are: Environmental pollution, industrial wastes, air, and agricultural sedimentation and wastes; environmental balance; natural resources; and other economic activity.

Patton, David R., Virgil E. Scott, and Erwin L. Boeker. CONSTRUCTION OF AN 8-mm TIME-LAPSE CAMERA FOR BIOLOGICAL RESEARCH. *U.S. For. Serv. Res. Pap. RM-88.* 8 p., 5 figs. Apr. 1972. *WR 147: 14*

Abstract: A time-lapse camera for use in biological research can be constructed from a super 8-mm movie camera. A single-frame release is activated through a solenoid controlled by an electronic timer. The unit is activated by a photo cell for daylight operation. Timing interval can be varied from 1/2 second to 60 minutes. With a 5-minute interval and 12 hours of daylight, one roll of film will last 25 days. The unit operates from a 6-volt d.c. power supply. Cost of camera, solenoid, and electronic timer is approximately $165.

Temple, Stanley A. A PORTABLE TIME-LAPSE CAMERA FOR RECORDING WILDLIFE ACTIVITY. *J. Wildl. Manage.* 36(3): 944-947, 3 figs. July 1972. *WR 147: 14*

[Cornell Univ., Ithaca, N.Y.] Abstract: An inexpensive, portable, time-lapse camera suitable for recording wildlife activities is described, and plans for its construction are given. The camera will take photographs at adjustable, predetermined intervals; it automatically shuts itself off when light becomes inadequate for photography.

WILDLIFE--MANAGEMENT & RESEARCH, GENERAL

Davis, Robert K., and Joseph J. Seneca. MODELS FOR SUPPLY AND DEMAND ANALYSIS IN STATE FISH AND GAME PLANNING. *Trans. N. Am. Wildl. Nat. Resour. Conf.* 37: 234-246, 1 fig. 1972. *WR 147: 14*

[George Washington Univ., Washington, D.C.]

Kouba, Leonard J. CONTROLLED SHOOTING PRESERVES: INTEGRATING RECREATION AND SOUND LAND MANAGEMENT. *J. Soil Water Conserv.* 27(4): 156-159, 1 fig. July-Aug. 1972. *WR 147: 14*

[Northern Ill. Univ., DeKalb.] The following aspects of controlled shooting preserves are discussed: history of the preserves, legislation governing preserves, preserve operation, and conservation benefits of preserves.

Morrison, P., editor. WILDLIFE 1971--A REVIEW. *New Zealand Wildl. Serv. Dep. Internal Affairs* no. 3. 64 p. [1972.] *WR 147: 14*

The partridge in New Zealand, R. T. Adams; *State forest game bird survey*, M. E. Crombie; *Southern wildlife management reserves*, J. W. Cheyne; *Waterfowl diary scheme*, T. A. Caithness; *Grey teal*, J. A. Mills; *Blue duck*, I. S. Hogarth; *Black swan at Lake Ellesmere*, J. S. Adams; *Small rails at Pukepuke*, R. B. Lavers; *Islands surveys*, B. D. Bell; *Chatham Island robin*, J. A. D. Flack; *Will kokako survive in the North Island?*, I. G. Crook; *Takahe--a vanishing species?*, B. E. Reid; *Red-billed gull*, J. A. Mills; *Petrels and rats*, M. J. Imber; *The royal albatross of Taiaroa Head*, C. J. R. Robertson; *Bird hazard at airports*, T. A. Caithness; and *Insecticides*, E. S. Bucknell.

Schmidt, John L. WILDLIFE PRODUCTION ON "SET-ASIDE ACRES." *Coop. Ext. Serv. S. Dak. State Univ. U.S. Dep. Agric.* EMC 635. 2 p., illus. Aug. 1971. *WR 147: 14*

A guide for landowners.

Schmidt, John L., and John B. Farley. A LANDOWNER'S GUIDE...WILDLIFE MANAGEMENT. *Coop. Ext. Serv. S. Dak. State Univ. U.S. Dep. Agric.* FS 541. 6 p., illus. Aug. 1971. *WR 147: 14*

Includes information on habitat plantings, nesting cover, trees and shrubs, farming practices, and predator control to attract and increase wildlife; and mentions types of financial assistance for habitat improvement and preservation. --From abstr.

Swank, Wendell G. WILDLIFE MANAGEMENT IN MASAILAND, EAST AFRICA. *Trans. N. Am. Wildl. Nat. Resour. Conf.* 37: 278-287. 1972. *WR 147: 14*

[FAO Wildl. Manage. Project, Nairobi, Kenya.]

Toschi, A., and M. Spagnesi. LINEAMENTI DI UNA PIANIFICAZIONE FAUNISTICO-VENATORIA DELLE REGIONE EMILIO-ROMAGNA. [OUTLINE OF FAUNA MANAGEMENT AND HUNTING IN THE REGION EMILIO-ROMAGNA.] *Ric. Biol. Selvaggina* 52. p. 5-99, illus. 1971. [From Biol. Abstr. 54(6), 1972. In Italian with English, French, and German summ.] *WR 147: 15*

[Lab. Zool. Appl. Caccia, Bologna, Italy.]

WILDLIFE--ECONOMIC & OTHER VALUES

Pearse Bowden Economic Consultants Limited. THE VALUE OF RESIDENT HUNTING IN BRITISH COLUMBIA / STUDY REPORT NO. 6 ON THE ECONOMICS OF WILDLIFE AND RECREATION. *British Columbia Fish & Wildl. Branch.* 58 p., illus. 1972. Copies are available without charge from the Fish & Wildlife Branch, Victoria, British Columbia, Canada. *WR 147: 15*

British Columbia's game resources are of considerable value to resident hunters and make a significant impact on the provincial economy. There is reason for concern over the maintenance of these resources and the protection and enhancement of the quality of the hunting opportunities which they provide. In British Columbia game management to date has fallen far short of the level of intensity which is possible with present knowledge and management expenditures would seem opportune and would no doubt be more than justified--both in terms of the value of recreation for hunters and the values which other people attach to our wildlife resources.--From summ.

U.S. Bur. Sport Fish. Wildl. 1970 NATIONAL SURVEY OF FISHING AND HUNTING. *U.S. Bur. Sport Fish. Wildl. Resour. Publ.* no. 95. 108 p., illus. 1972. For sale by Supt. Documents, GPO, Washington, D.C., at $1.25. *WR 147: 15*

In 1970, thirty-six million fisherman and hunters spent $7.1 billion to fish and hunt.

WILDLIFE--FOOD HABITS & TECHNIQUES

Bothma, J. Du P. REPORTS FROM THE MAMMAL RESEARCH UNIT: 2. FOOD HABITS OF SOME CARNIVORA (MAMMALIA) FROM SOUTHERN AFRICA. *Ann. Transvaal Mus.* 27(2): 15-26, illus. 1971. [From Biol. Abstr. 54(3), 1972.] *WR 147: 15*

[Univ. Pretoria, Pretoria, South Africa.]

WILDLIFE--PREDATION, CROP DAMAGE, CONTROL

Baumler, W. UEBER LAESTIGE VOEGEL UND SAEUGER ALS KULTURFOLFER AN MUELL-KIPPEN UND MOEGLICHKEITEN ZUR IHRER BIOLOGISCHEN BEKAEMPFUNG. [ON TROUBLESOME BIRDS AND MAMMALS IN RUBBISH DUMPS AND POSSIBILITIES FOR THEIR BIOLOGICAL CONTROL.] *Anz. Schaedlingskd. Pflanzenschutz* 44(9): 138-141, illus. 1971. [From Biol. Abstr. 54(2), 1972. In German with English summ.] *WR 147: 15*

[Inst. Angew. Zool., Amalienst. 52, Munich, Germany.] Abstract: Observations were made on 19 rubbish dumps around Munich which showed that these areas favor some injurious birds and mammals, such as crows *(Corvus c. corone, C. frugilegus)* and rats *(Rattus norvegicus)*. The most important natural enemies of the rats are the white stoat *(Mustela erminea)* and the polecat *(Putorius putorius)*. These mammals were observed to attack the rat tunnels and were able to drive them out. The mustelids should be protected and encouraged to live in rubbish dumps. Some suggestions on the biological control against crows and rats are discussed.

Dathe, Heinrich. DER BUNTFALK, *FALCO SPARVERIUS*, ALS FLEDERMAUSJAEGER AUF KUBA. [SPARROW HAWK, *FALCO SPARVERIUS*, AS BAT HUNTER IN CUBA.] *Milu* 3(2): 195-197. 1971. [From Biol. Abstr. 54(5), 1972. In German with English summ.] *WR 147: 15*

[Tierpark Berlin, Berlin, Germany.]

WILDLIFE—REPORTS OF ORGANIZATIONS & REPORTS OF HARVESTS

Alaska Department of Fish and Game. THE ALASKA HUNTER'S GUIDEBOOK. *Alaska Dep. Fish Game.* 47 p., illus. June 1972. *WR 147: 16*
This guidebook contains information of the hunter's responsibility and the hunting regulations, trophy care, and meat care. The following species are included in the discussion: moose, caribou, Roosevelt elk, deer, Dall sheep, mountain goat, brown-grizzly bear, black bear, walrus, wolf, hares, waterfowl, upland game birds, and furbearers.

Finegan, R. P. GAME HARVEST QUESTIONNAIRE ANALYSIS, 1970 / SECTION I UNGULATES, SECTION II BIRDS. *British Columbia Fish & Wildl. Branch.* xii + 167 p., illus. [1970.] *WR 147: 16*
[Fish & Wildl. Branch, Victoria, British Columbia, Canada.] "Any general view of the figures since 1950 brings two features into focus. The first feature is the increase in the number of hunters. Licence sales more than doubled from 67,396 in 1950 to 153,424 in 1970. The rise has been a steady one and has been more rapid than the general rise in population. The inference is that hunting as an outdoor recreational activity has gained in popularity since 1950. The second feature has been an increase in harvests of deer and moose even greater than the increase in hunters."

Jarvis, Caroline, editor. INTERNATIONAL ZOO YEARBOOK, VOLUME 8. *Zool. Soc. London.* vi + 414 p., 70 figs. on 26 pls. 1968. Price $25.00. *WR 147: 16*
"As in the past, Volume 8 of the *Yearbook* is divided into three parts. Part 1 consists of 24 papers on canids and felids in captivity. Part 2, new developments in the zoo world contains 49 papers and notes and is divided into five subsections entitled Architecture and Construction, Breeding, Conservation, Education, and Husbandry, Research and Zoos. Part 3, the reference section, lists the world's zoos, aquaria, bird parks and research colonies of rare primates; zoo associations; wild vertebrates bred in captivity during 1966; a census of rare wild animals in captivity in 1967; studbooks being kept for rare mammal species in captivity; and a subject index. The special feature of the reference section is the survey of marking techniques for identifying wild animals in captivity."

The Nature Conservancy. MONKS WOOD EXPERIMENTAL STATION REPORT FOR 1969-1971. *Nature Conservancy* (Abbots Ripton, Huntingdon, England). 118 p., 3 figs. 1972. Price 60d. *WR 147: 16*
Two sections of interest to wildlifers are: Toxic Chemicals and Wildlife Section, and British Antarctic Survey; Zoological Section.

Petrusewicz, Kazimierz, director. POLISH ACADEMY OF SCIENCES INSTITUTE OF ECOLOGY REPORT ON SCIENTIFIC ACTIVITIES FOR 1970. *Inst. Ecol. Polish Acad. Sci.* (Warsaw). 71 p. 1971. *WR 147: 16*
Departments reporting are: Populations, Biocenology, Hydrobiology, Applied Ecology, Applied Limnology at Mikołajki, Agroecology at Turew, Interdepartmental Laboratory of Bioenergetics, Interdepartmental Laboratory of Statistics, and Information and Scientific Documentation.

Transvaal Provincial Administration. TRANSVAAL NATURE CONSERVATION DIVISION / SIXTH ANNUAL REPORT 1970-1971. *Transvaal Prov. Adm.* (Republic South Africa). 40 p., illus. 1972. *WR 147: 16*
Flora conservation, game management, fisheries management, law enforcement and field services, and outdoor recreation are discussed.

WETLANDS & WILDLIFE

Choate, Jerry S. EFFECTS OF STREAM CHANNELING ON WETLANDS IN A MINNESOTA WATERSHED. *J. Wildl. Manage.* 36(3): 940-944, 2 figs. July 1972. *WR 147: 16*
[New Brunswick Fish & Wildl. Branch, Fredericton, New Brunswick, Canada.] Abstract: Over 60 miles of stream was channeled in the lower three quarters of the Hawk Creek Watershed, west-central Minnesota. The channels permitted more

rapid removal of flood waters but also encouraged construction of ditches and tiles by providing improved outlets. Wetlands valuable to waterfowl and other wildlife were drained as a result. On a percentage basis, wetland loss in the lower part of the watershed was nine times greater than in the unchanneled upper quarter.

Mudie, Peta J. A SURVEY OF THE COASTAL WETLAND VEGETATION OF NORTH SAN DIEGO COUNTY. *Calif. Dep. Fish Game Wildl. Manage. Adm. Rep.* no. 70-4. 56 p. June 1970. *WR 147: 17*

[San Diego Mus. Nat. Hist., San Diego, Calif.] Recommendations are made towards improvement of the coastal wetlands for fish and wildlife.—From abstr.

Stewart, Robert E., and Harold A. Kantrud. HYDROLOGY OF PRAIRIE POTHOLES IN NORTH DAKOTA / VEGETATION OF PRAIRIE POTHOLES, NORTH DAKOTA, IN RELATION TO QUALITY OF WATER AND OTHER ENVIRONMENTAL FACTORS. *Geol. Surv. Prof. Pap.* no. 585-D. iv + 36 p., 38 figs. 1972. For sale by Supt. Documents, GPO, Washington, D.C., at 60¢. *WR 147: 17*

[Northern Prairie Wildl. Res. Cent., Jamestown, N. Dak.] *Hydrology of Prairie Potholes in North Dakota* was published as separate chapters A-D. Chapters A-C are not biologically oriented and, for that reason, are not listed.

RANGELAND & WILDLIFE

Gindre, R., and Y. Allion. LE PETIT GIBIER DE PLAINE DANS UN SECTEUR DU GÂTINAIS-EST. CONTRIBUTION À L'ESTIMATION DES POTENTIALITÉS DE SON HABITAT. [THE SMALL GAME OF THE PLAINS IN A SECTOR OF GATINAIS-EST. A CONTRIBUTION TOWARDS THE ESTIMATION OF THE POTENTIAL OF THIS HABITAT.] *Bull. Spéc. Conseil Supér. de la Chasse* 15: 9-22. 1971. [From Ibis 114(3), 1972. In French.] *WR 147: 17*

FORESTLAND—FORESTRY & ECOLOGY

Komarek, E. V., Sr., chairman. PROCEEDINGS ANNUAL TALL TIMBERS FIRE ECOLOGY CONFERENCE / FIRE IN AFRICA / NUMBER 11 / 22-23 APRIL 1971 / TALLAHASSEE, FLORIDA. *Tall Timbers Res. Sta.* (Tallahassee, Fla.). 516 p., illus. 1971. *WR 147: 17*

Includes the following papers: *Fire in Africa—a brief re-survey*, John Phillips; *Veld burning in the Kruger National Park*, P. Van Wyk; *Veld burning in Natal*, J. D. Scott; *The effects of fire on two vegetation types of matopos*, T. C. D. Kennan; *Fire as a method of eradicating macchia vegetation in the Anatole Mountains of South Africa—experimental and field scale results*, W. S. W. Trollope; *Fire, man and wildlife as interacting factors limiting the development of vegetation in Rhodesia*, Oliver West; *Fire in West African vegetation*, R. Rose Innes; *Fire: its effect on grasslands, including swamps—southern, central and eastern Africa*, H. J. Van Rensburg; *The influence of fire on important range grasses of East Africa*, Jon M. Skovlin; *Controlled burning in the Kruger National Park—history and development*, A. M. Brynard; *Fire and management in the Tanzania National Parks*, J. S. Owen; *Fire and conservation of the habitat in Kenya*, P. M. Olindo; *Problem of controlling fires in Uganda National Parks*, R. J. Wheater; *The history of veld burning in the Wankie National Park, Rhodesia*, Bruce Austen; *Fire and animal impact on vegetation in Tanzania National Parks*, Desmond Vesey-Fitzgerald; *Nature, wildlife and the habitat with a discussion on fire and other influences*, P. E. Glover; *Grass foggage—food for fauna or fuel for fire, or both?*, Peter Hill; *The effect of bush fire on the principal pentatomid bugs (Hemiptera) of an Ivory Coast savanna*, Dominique Gillon; *The effect of bush fire on the principal acridid species of an Ivory Coast savanna*, Yves Gillon; and *Lightning and fire ecology in Africa*, E. V. Komarek, Sr.

Odum, Howard T., and Robert F. Pigeon, editors. A TROPICAL RAIN FOREST / A STUDY OF IRRADIATION AND ECOLOGY AT EL VERDE, PUERTO RICO. *Office Information Serv. U.S. Atomic Energy Commission.* Published in 3 books variously paged, totaling approximately 1675 pages, illus. 1970. Price $10.00. *WR 147: 18*

Contents: The rain forest project, The rain forest at El Verde, The radiation experiment, Plants and the effects of radiation, Animals and the effects of radiation, Microorganisms and the effects of radiation, Cytological studies within the irradiated forest, Mineral cycling and soils, and Forest metabolism and energy flows.

Twight, Peter A., and Leon S. Minckler. ECOLOGICAL FORESTRY FOR THE CENTRAL HARDWOOD FOREST. *Natl. Parks & Conserv. Assoc.* (Washington, D.C.). 12 p., illus. Apr. 1972. For sale by the Natl. Parks & Conserv. Assoc., 1701 18th Street N.W., Washington, D.C., at $1.00. *WR 147: 18*

Harvest impacts are described as they affect the residual forest, its growth, esthetics, and wildlife.--From abstr.

Twight, Peter A., and Leon S. Minckler. ECOLOGICAL FORESTRY FOR THE NORTHERN HARDWOOD FOREST. *Natl. Parks & Conserv. Assoc.* (Washington, D.C.). 12 p., illus. July 1972. For sale by the Natl. Parks & Conserv. Assoc., 1701 18th Street N.W., Washington, D.C., at $1.00. *WR 147: 18*

Enhancement of esthetic and ethical values, and of wildlife and recreation values, is discussed.--From abstr.

MAMMALS--GENERAL

Bol'shakov, V. N. [ECOLOGICAL DETERMINATION OF CERTAIN INTERNAL CHARACTERS OF SMALL MOUNTAIN MAMMALS IN CONNECTION WITH FEEDING HABITS.] *Ekologiya* 1(6): 71-79. 1970. [From Biol. Abstr. 54(6), 1972. In Russian.] *WR 147: 18*

[Inst. Plant Anim. Ecol., Ural Branch, Acad. Sci. USSR, Sverdlovsk, USSR.] The characteristics of the feeding of small species of mammals *(Sorex, Crocidura, Talpa, Neomys, Clethrionomys, Apodemus, Ochotona, Microtus, Cricetulus)* inhabiting mountains are discussed in relation to the altitude zoning of mountain systems. A clear-cut relation was established between the size of the digestive tract and size of the cecum and of the feeding habits of common mountainous species inhabiting different altitude zones.

Conaway, C. H. ECOLOGICAL ADAPTATION AND MAMMALIAN REPRODUCTION. *Biol. Reprod.* 4(3): 239-247. June 1971. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 18*

Dagg, A. I., and D. E. Windsor. SWIMMING IN NORTHERN TERRESTRIAL MAMMALS. *Canadian J. Zool.* 50(1): 117-130, illus. 1972. [From Biol. Abstr. 54(1), 1972. In English with French summ.] *WR 147: 18*

[Univ. Guelph, Guelph, Ontario, Canada.] Swimming mammals floated at a variety of angles correlated with hair and body fat present, and used a variety of gaits. In general small mammals with long tails used their hind legs alternately while large mammals and those with short tails paddled with four ft alternately as in the trot. The species that used their legs synchronously were either semiaquatic or had a phylogenetic background of hopping. During the development, mice and rats possessed six swimming gaits, including several asymmetrical gaits used by neonates, the early use of the front legs, the subsequent use of four legs, and the final use of hind legs, which was the adult gait. The developmental swimming patterns of guinea pigs, rabbits, hamsters, gerbils, and lemmings were less complex and concluded with the use of four legs, the adult gait. The ability to swim in a straight line was often a function of maturity, occurring sometimes before the eyes opened. The ability to hold the nose out of the water always preceded the opening of the eyes.

Hess, N. S. THE HANDLING AND RESTRAINT OF MAMMALS. *America's First Zoo* 23 (4): 27-30. Dec. 1971. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 18*

Klein, David R. PROBLEMS IN CONSERVATION OF MAMMALS IN THE NORTH. *Biol. Conserv.* 4(2): 97-101. 1972. [From Biol. Abstr. 54(5), 1972.] *WR 147: 19*
[Univ. Oslo, Oslo, Norway.] Oil development, tourism, and expanding human populations, are bringing about increased pressures on large mammals in the Arctic and Subarctic.

Kruuk, Hans. SURPLUS KILLING BY CARNIVORES. *J. Zool.* (London) 166(2): 233-244, illus. 1972. [From Biol. Abstr. 54(5), 1972.] *WR 147: 19*
[Univ. Oxford, Oxford, England.] Abstract: In several field observations, foxes, spotted hyaenas and other carnivores killed many more prey individuals than they could eat. Functional and causal aspects of this phenomenon are discussed and the conclusion is reached that these surplus kills are the consequence of behavioral compromises in both predator and prey to meet opposing environmental requirements.

Lessertisseur, J. LES PROPORTIONS DES MEMBRES CHEZ LES MARSUPIAUX SAUTEURS BIPEDES: PARALLELE AVEC LES RONGEURS ET PRIMATES D'ADAPTATION COMPARABLE. [LIMB PROPORTIONS IN JUMPING BIPEDAL MARSUPIALS: PARALLEL TO RODENTS AND PRIMATES SHOWING SIMILAR ADAPTATION.] *Mammalia* 35(2): 315-340, illus. 1971. [From Biol. Abstr. 54(4), 1972. In French with English and German summ.] *WR 147: 19*

Wemmer, C. SCENT-MARKING AND ANOINTING: BEHAVIORAL PARALLELISM IN MAMMALS. *Bull. Ecol. Soc. Am.* 52(4): 30. Dec. 1971. [From J. Mammal. 53(2, suppl.), 1972. Abstract only.] *WR 147: 19*

MAMMALS--TECHNIQUES

Altenbach, J. Scott. A SILICONE RUBBER PLUG FOR CHRONIC EXTERIORIZATION OF EMG LEADS IN SMALL MAMMALS. *J. Mammal.* 53(3): 630-632, 2 figs. Aug. 1972. *WR 147: 19*
[Colo. State Univ., Fort Collins.]

Anderson, D. E., and Paul Herman. A SIMPLE RODENT RESTRAINING CAGE. *Behav. Res. Methods Instrum.* 4(1): 40, illus. 1972. [From Biol. Abstr. 54(2), 1972.] *WR 147: 19*
[Univ. Oreg., Portland.] A squeeze cage is described.

Hagen, Herb. A REVIEW OF THE USE OF TOXIC MATERIALS FOR MAMMALIAN ANIMAL CONTROL IN CALIFORNIA. *Calif. Dept. Fish & Game Wildl. Manage. Admin. Rep.* no. 72-5. 8 p. May 1972. *WR 147: 19*

Smith, H. Duane, Clive D. Jorgensen, and H. Dennis Tolley. ESTIMATION OF SMALL MAMMAL USING RECAPTURE METHODS: PARTITIONING OF ESTIMATOR VARIABLES. *Acta Theriol.* 17(5): 57-66, 1 fig. May 1972. In English with Polish summ. *WR 147: 19*
[Brigham Young Univ., Provo, Utah.]

MAMMALS--FAUNAS & MANUALS

Jones, Owilym S., Lim Boo Liat, and John H. Cross. A KEY TO THE MAMMALS OF TAIWAN. *Chinese J. Microbiol.* 4(3/4). Illus. 1971. [From Biol. Abstr. 54(4), 1972. In English with Chinese summ.] *WR 147: 19*
[U.S. Nav. Med. Res. Unit No. 2, Taipei, Taiwan.]

Lavery, H. J., and P. M. Johnson. MAMMALS AND BIRDS OF THE TOWNSVILLE DISTRICT, NORTH QUEENSLAND. 1. INTRODUCTION AND MAMMALS. *Queensland J. Agric. & Anim. Sci.* 25: 29-37, 2 figs. 1968. *WR 147: 19*
A survey of mammals in the Townsville district, north Queensland, made during 1965-1966, is described. Fifty-three species were recorded, including two Monotremata, 20 Marsupialia and 31 Eutheria, seven of the last introduced. Habitat types and estimates of abundance ranging from scarce to abundant are given.--From summ.

Niethammer, Jochen. KLEINSAEUGER VON KITHIRA, GRIECHENLAND. [SMALL MAMMALS FROM KITHIRA, GREECE.] *Saugetierkd. Mitt.* 19(4): 363-365. 1971. [From Biol. Abstr. 54(2), 1972. In German with English summ.] *WR 147: 20*
[Zool. Inst. Univ., Bonn, Germany.]

Pelikan, Jaroslav, Gamal Madkour, and Jiri Gaisler. ON SOME MAMMALS FROM EGYPT (INSECTIVORA, LAGOMORPHA, RODENTIA). *Zool. Listy* 20(4): 307-318, illus. 1971. [From Biol. Abstr. 54(3), 1972.] *WR 147: 20*
[Czechoslovak Acad. Sci., Brno, Czechoslovakia.] The observations are based on 41 specimens of nine mammal species captured in various localities and habitats of the United Arab Republic during April and May, 1969.

Petrov, O. V. [MAMMALS OF THE SCIENTIFIC FORESTRY FARM "LES NA VORSKLE" AND ITS ENVIRONS.] *Uch. Zap. Gos. Univ.* 351. p. 119-187. 1971. [From Biol. Abstr. 54(6), 1972, from Ref. Zh., Biol., 1971, no. 71609. In Russian.] *WR 147: 20*
The biology, nature of territorial distribution and biotopes are outlined for 50 spp. of mammals.

Swickard, Martha, Glenn E. Haas, and Richard P. Martin. NOTES ON SMALL MAMMALS INFREQUENTLY RECORDED FROM THE JEMEZ MOUNTAINS, NEW MEXICO (1). *Bull. N. Mex. Acad. Sci.* 12(2): 10-14, 2 figs. Dec. 1971. *WR 147: 20*
[Luna County Courthouse, Deming, N. Mex.]

Tavrovskii, V. A., O. V. Egorov, V. G. Krivosheev, M. V. Popov, and V. Lavutin. [MAMMALS OF YAKUTIA.] *Izdat. "Nauka"* (Moscow). 660 p. 1971. Price 4 rubles, 34 kopecks. In Russian. *WR 147: 20*

Tegner, H. NOTES ON THE MAMMALS OF MAJORCA. *J. Zool.* 164(2): 263-265. June 1971. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 20*

Tovar, Augusto. CATALOGO DE MAMIFEROS PERUANOS. [CATALOG OF PERUVIAN MAMMALS.] *An. Cient. Univ. Agrar. Lima* (La Molina) 9(1/2): 18-37. 1971. [From Biol. Abstr. 54(5), 1972. In Spanish with English summ.] *WR 147: 20*
[Univ. Nac. Agrar., Lima, Peru.] Eleven orders with a total of 44 families including 378 spp. and sspp. are considered.

Van Wijngaarden, A., V. Van Laar, and M. D. M. Trommel. DE VERSPREIDING VAN DE NEDERLANDSE ZOOGDIEREN (MAMMALIA: INSECTIVORA, CHIROPTERA, RODENTIA, LAGOMORPHA, CARNIVORA, PINNIPEDIA, ARTIODACTYLA). [THE DISTRIBUTION OF NETHERLANDS MAMMALS (MAMMALIA: INSECTIVORA, CHIROPTERA, RODENTIA, LAGOMORPHA, CARNIVORA, PINNIPEDIA, ARTIODACTYLA).] *Lutra* 13(1-3): 1-41, illus. 1971. [From Biol. Abstr. 54(4), 1972. In Dutch with English summ.] *WR 147: 20*

MAMMALS--POPULATIONS, HOME RANGES, COMMUNITIES

Kubantsev, B. S., V. N. D'yakonov, and T. I. Rybakova. [POPULATION DENSITY AND DYNAMICS OF SEX COMPOSITION OF MAMMALS.] *Ekologiya* 1(3): 49-57, illus. 1970. [From Biol. Abstr. 54(4), 1972. In Russian.] *WR 147: 20*
[Volgograd. Pedagog. Inst., Volgograd, USSR.]

Sheppe, Walter. THE ANNUAL CYCLE OF SMALL MAMMAL POPULATIONS ON A ZAMBIAN FLOODPLAIN. *J. Mammal.* 53(3): 445-460, 9 figs. Aug. 1972. *WR 147: 20*
[Univ. Akron, Akron, Ohio.] Abstract: Several species of rodents and shrews live on the Kafue River Flats when they are not covered by floodwaters. *Mastomys natalensis* is usually the most abundant. *Pelomys fallax, Crocidura mariquensis,* and *C. occidentalis* often are common in wet sites. Breeding begins late in the dry season and is at its height during the rains. Populations are built up at this time, and as floodwaters rise over a period of several months they are forced to the margins of the floodplain, where they sometimes form dense refuge populations. As the flood slowly recedes they follow it out, and by the end of

the dry season the few surviving animals are confined largely to marshy areas near the river. Body weight and fat deposits decrease during the dry season. Live-trapping studies suggest that populations are unstable throughout the year, with few animals resident in an area for more than a few weeks. Small mammals adapt to the unstable environment of the Flats by moving about more than populations in more stable environments and by breeding rapidly when conditions permit.

MAMMALS—PARASITES & DISEASES

Adamovich, V. L. [FLEAS OF SMALL MAMMALS FROM VOLYNSKOYE POLESJE OF THE UKRAINE.] *Parazitologiya* 5(5): 417-418. 1971. [From Biol. Abstr. 54(1), 1972. In Russian with English summ.] *WR 147: 21*

Bond, R. E., E. L. McCune, and L. D. Olson. ISOLATION OF *PASTEURELLA MULTOCIDA* FROM WILD RACCOONS AND FOXES: PRELIMINARY REPORT. *J. Wildl. Dis.* 8(3): 296-299, 1 fig. July 1972. *WR 147: 21*
[Univ. Mo., Columbia.]

Dymon, M., E. Slowakiewicz, B. Pawlik, and J. Starzyk. INVESTIGATION ON THE FREQUENCY OF OCCURRENCE OF THE PROTOZOAN *TOXOPLASMA GONDII* IN SMALL WILD MAMMALS. *Acta Biol. Cracov. Ser. Zool.* 14(1): 41-50. 1971. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 21*

Emerson, K. C., and R. D. Price. THREE NEW SPECIES OF MALOPHAGA FROM AFRICAN MAMMALS (TRICHODECTIDAE). *Proc. Entomol. Soc. Washington* 73(4): 372-376. Dec. 1971. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 21*

Erhardová-Kotrlá, B., and M. Daniel. PARASITIC WORMS OF SMALL MAMMALS FROM THE REGION OF THE TIRICH MIR (HINDUKUSH, WEST PAKISTAN). *Folia Parasitol.* (Prague) 18(3): 227-234. 1971. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 21*

Farley, J. A REVIEW OF THE FAMILY SCHISTOSOMATIDAE: EXCLUDING THE GENUS *SCHISTOSOMA* FROM MAMMALS. *J. Helminthol.* 45(4): 289-320. 1971. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 21*

Fenton, M. Brock. DISTRIBUTION AND OVERWINTERING OF *MYOTIS LEIBII* AND *EPTESICUS FUSCUS* (CHIROPTERA: VESPERTILIONIDAE) IN ONTARIO. *Roy. Ontario Mus. Life Sci. Occas. Pap.* no. 21. 8 p., 3 figs. 28 July 1972. For sale by the Royal Ontario Museum, 100 Queen's Park, Toronto, Canada, at 50¢. *WR 147: 21*
[Carleton Univ., Ottawa, Ontario, Canada.]

Ivashkin, V. M., V. N. Kontrimavichus, and N. S. Nazarova. [METHODS OF COLLECTING AND STUDYING HELMINTHS / TERRESTRIAL MAMMALS.] *Izdat. "Nauka"* (Moscow). 123 p., 29 figs. 1971. Price 71 kopecks. In Russian. *WR 147: 21*

Kazlauskas, J., and A. Šlikas. [THE INVESTIGATIONS OF EMBRYONIC DEVELOPMENT OF *TRICHOCEPHALUS* IN ROE AND HARE.] *Acta Parasitol. Lituanica* 10: 59-67. 1970. In Russian with Lithuanian and English summ. *WR 147: 21*

Mahnert, Volker. GRAHAMELLA UND SPOROZOA ALS BLUTPARASITEN ALPINER KLEINSAEUGER (PARASITOLOGISCHE UNTERSUCHUNGEN AN ALPINEN KLEINSAEUGERN VII). [GRAHAMELLA AND SPOROZOA AS BLOOD PARASITES OF SMALL ALPINE MAMMALS (PARASITOLOGICAL STUDIES ON SMALL ALPINE MAMMALS VII).] *Acta Trop.* 29(1): 88-100, illus. 1972. [From Biol. Abstr. 54(3), 1972. In German with English and French summ.] *WR 147: 21*
[Mus. Hist. Nat. Geneve, Route Malagnou, Geneva, Switzerland.]

Parker, Dale D., and others. ECOLOGY STUDIES IN WESTERN UTAH / 1971 / ANNUAL REPORT. *EcoDynamics, Inc.*, Research sponsored by *Deseret Test Cent. Dep. Army, EcoDynamics Ser.* no. 72-1. xi + 112 p., 8 figs. 31 May 1972. *WR 147: 22*
During 1971, a total of 4,316 wild vertebrates was collected from the study areas and processed for disease analysis by isolation and serological techniques. Included were 3,186 rodents, 1,062 lagomorphs, and 68 other mammals. In addition, 8,047 ectoparasites associated with these animals were also collected and tested; this total was made up of 5,852 ticks and 2,195 fleas. Also tested were 2,422 deerflies. Livestock serum samples, 1,684 from sheep and 225 from cattle, collected by the government from the study area, were tested serologically. Host-parasite relationships of ticks and fleas resulting from these collections are discussed.

Scherer, W. F., R. W. Dickerman, R. P. La Fiandra, C. Wong Chia, and J. Terrian. ECOLOGIC STUDIES OF VENEZUELAN ENCEPHALITIS VIRUS IN SOUTHEASTERN MEXICO: IV. INFECTIONS OF WILD MAMMALS. *Am. J. Trop. Med. Hyg.* 20(6, pt. 1): 980-988, illus. 1971. [From Biol. Abstr. 54(3), 1972.] *WR 147: 22*
[Cornell Univ. Med. Coll., New York, N.Y.]

Šlikas, A., and J. Kazlauskas. [ON THE SURVIVAL OF EGGS OF *TRICHOCEPHALUS* OF ROE AND HARE UNDER THE NATURAL CONDITIONS OF LITHUANIA.] *Acta Parasitol. Lituanica* 10: 75-80. 1970. In Russian with Lithuanian and English summ. *WR 147: 22*

Šlikas, A., and J. Kazlauskas. [THE EFFECT OF LOW TEMPERATURES ON THE SURVIVAL OF EGGS OF *TRICHOCEPHALUS* PARASITIZING IN ROE AND HARE.] *Acta Parasitol. Lituanica* 10: 81-83. 1970. In Russian with Lithuanian and English summ. *WR 147: 22*

SHREWS, MOLES, BATS

Baker, J. R., Sheila M. Green, Lisbeth A. Chaloner, and Maria Gaborak. TRYPANOSOMA *(SCHIZOTRYPANUM) DIONISII* OF *PIPISTRELLUS PIPISTRELLUS* (CHIROPTERA): INTRA- AND EXTRACELLULAR DEVELOPMENT *IN VITRO*. *Parasitology* 65(2): 251-263, 2 figs. + 2 pls. Oct. 1972. *WR 147: 22*
[Molteno Inst., Downing Street, Cambridge, England.]

Black, Hal L. DIFFERENTIAL EXPLOITATION OF MOTHS BY THE BATS *EPTESICUS FUSCUS* AND *LASIURUS CINEREUS*. *J. Mammal.* 53(3): 598-601. Aug. 1972. *WR 147: 22*
[Univ. Zambia, Box 2379, Lusaka, Zambia.]

Bogan, Michael A. OBSERVATIONS ON PARTURITION AND DEVELOPMENT IN THE HOARY BAT, *LASIURUS CINEREUS*. *J. Mammal.* 53(3): 611-614. Aug. 1972. *WR 147: 22*
[Univ. N. Mex., Albuquerque.]

Christian, Frederick A. *ACANTHATRIUM UMBRACULATUN* SP. N. (DIGENEA: LECITHODENDRIIDAE) FROM THE LITTLE BROWN BAT, *MYOTIS LUCIFUGUS*. *J. Parasitol.* 58(4): 710-711. Aug. 1972. *WR 147: 22*
[Southern Univ., Baton Rouge, La.] Abstract: The new species is described from the intestine of bats collected at Columbus, Ohio. It differs from all other species of *Acanthatrium* in having spines in the genital atrium arranged in the outline of an umbrella with a curved handle.

Crespo, Raúl Flores, Samuel B. Linhart, and Richard J. Burns. COMPORTAMIENTO DEL VAMPIRO *(DESMODUS ROTUNDUS)* EN CAUTIVERIO. [THE BEHAVIOR OF THE VAMPIRE BAT *DESMODUS ROTUNDUS* IN CAPTIVITY.] *Southwest. Nat.* 17(2): 139-143. 15 Sept. 1972. In Spanish with English abstr. *WR 147: 22*
[Inst. Nacl. Invest. Pecuarias, Apdo. Postal 41-652, Mexico, Mexico.]

Dhanda, V., and P. K. Rajogopaln. *ORNITHODOROS (RETICULINASUS) CHIROPTERPHILA* SP. NOV. (ACARINA: ARGASIDAE), A NEW BAT ECTOPARASITE FROM MYSORE STATE, INDIA. *Oriental Insects* 5(2): 135-144. June 1971. *WR 147: 23*

Dinale, Giovanni. STUDI SUI CHIROTTERI ITALIANI: XI. BIOMETRIA DI UNA COLLEZIONE DI *RHINOLOPHUS EURYALE* BLASIUS CATTURATI IN LIGURIA (ITALIA). [STUDIES ON ITALIAN CHIROPTERA: XI. BIOMETRY OF A COLLECTION OF *RHINOLOPHUS EURYALE* BLASIUS CAPTURED IN LIGURIA (ITALY).] *Ann. Mus. Civ. Stor. Nat. Giacomo Doria* 78: 217-227, illus. 1970/1971. [From Biol. Abstr. 54(5), 1972. In Italian with English summ.] *WR 147: 23*
[Univ. Roma, Rome, Italy.]

Duncan, P., and R. W. Wrangham. ON THE ECOLOGY AND DISTRIBUTION OF SUBTERRANEAN INSECTIVORES IN KENYA. *J. Zool.* 164(2): 149-163. June 1971. [From J. Mammal. 53(2), 1972.] *WR 147: 23*

Dwyer, P. D. TEMPERATURE REGULATION AND CAVE-DWELLING IN BATS: AN EVOLUTIONARY PERSPECTIVE. *Mammalia* 35(3): 424-455. Sept. 1971. [From J. Mammal. 53(2, suppl.), 1972. In (English) with French summ.] *WR 147: 23*

Easterla, David A. STATUS OF *LEPTONYCTERIS NIVALIS* (PHYLLOSTOMATIDAE) IN BIG BEND NATIONAL PARK, TEXAS. *Southwestern Nat.* 17(3): 287-292. 6 Oct. 1972. *WR 147: 23*
[Purdue Univ., Lafayette, Ind.] Abstract: Six capture sites are reported for the Mexican long-tongued bat *(Leptonycteris nivalis)* in Big Bend National Park, Brewster County, Texas, and one in adjacent Coahuila, Mexico. Data are given on a four-year decline and disappearance of *L. nivalis* at Mt. Emory cave, the only colony location known for the United States. Three capture sites were in the Lower Sonoran Life-zone (arroyo-mesquite-acacia, and lechuguilla-creosotebush-cactus plant associations). This is the first report indicating *L. nivalis* is not limited to the Transition and Canadian Life-Zones (pine-oak forests).

Elder, William J., and Wilbur J. Gunier. IMPROVED TOOLS FOR BAT BANDERS. *Bat Res. News* 13(2): 14-19, 3 figs. Apr. 1972. *WR 147: 23*
[Univ. Mo., Columbia.]

Fain, A., and F. S. Lukoschus. PARASITIC MITES OF SURINAM. XV. NASAL ERZYNETID MITES OF BATS WITH A KEY OF THE KNOWN SPECIES (TROMBIDIFORMES). *Bull. Ann. Soc. Roy. Entomol. Belgique* 107(7-9): 284-297. Oct. 1971. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 23*

Fain, A., and F. S. Lukoschus. PARASITIC MITES OF SURINAM. XVIII. MITES OF THE GENERA *NOTOEDRES* AND *CHIRNYSSOIDES* FROM BATS (SARCOPTIFORMES: SARCOPTES). *Bull. Ann. Soc. Roy. Entomol. Belgique* 107(7-9): 298-313. Oct. 1971. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 23*

Fenton, M. Brock. THE STRUCTURE OF AERIAL-FEEDING BAT FAUNAS AS INDICATED BY EARS AND WING ELEMENTS. *Canadian J. Zool.* 50(3): 287-296, illus. 1972. [From Biol. Abstr. 54(5), 1972. In English with French summ.] *WR 147: 23*
[Carleton Univ., Ottawa, Ontario, Canada.] Structure in the aerial-feeding bat faunas of southeastern Ontario, southern British Columbia, Cameroun, Guyana, and the Philippines is demonstrated on the basis of wing shape and relative ear size.

Fenton, M. B., and R. L. Peterson. FURTHER NOTES ON *TADARIDA ALOYSIISABAUDIAE* AND *TADARIDA RUSSATA* (CHIROPTERA: MOLOSSIDAE-AFRICA). *Canadian J. Zool.* 50(1): 19-24, illus. 1972. [From Biol. Abstr. 54(1), 1972. In English with French summ.] *WR 147: 23*
[Carleton Univ., Ottawa, Ontario, Canada.]

Findley, James S., Eugene H. Studier, and Don E. Wilson. MORPHOLOGIC PROPERTIES OF BAT WINGS. *J. Mammal.* 53(3): 429-444, 5 figs. Aug. 1972. *WR 147: 24*
[Univ. N. Mex., Albuquerque.] Abstract: A method was devised for estimating aspect ratio, wing ratio, wing area, wing loading, and wing length from study skins of bats. These measures were taken of 136 species representing 15 families. Wing area and loading are positively, and wing length negatively, correlated with size. Aspect and tip ratios are independent of size and of each other. Distinctive combinations of some of these variables characterize groups of bats that presumably have similar flight modes. Speed is positively correlated with aspect ratio and tip index, but regresses significantly only on the former. Long tips coupled with low aspect ratio may characterize hoverers. Long wings and short tips may characterize bats that are capable of remaining airborne at slow speeds. Most bats with low aspect ratios are forest dwellers, whereas species with high aspect ratios are migrants and foragers in open areas.

Forman, G. Lawrence. COMPARATIVE MORPHOLOGICAL AND HISTOCHEMICAL STUDIES OF STOMACHS OF SELECTED AMERICAN BATS. *Univ. Kans. Sci. Bull.* 49(10): 593-729, illus. 1972. [From Biol. Abstr. 54(4), 1972.] *WR 147: 24*
[Rockford Coll., Rockford, Ill.] Stomachs of 13 spp. of North American bats representing genera of 6 families and several different types of feeding habits were examined and compared morphologically, histologically, and histochemically.

Fulk, George W. THE EFFECT OF SHREWS ON THE SPACE UTILIZATION OF VOLES. *J. Mammal.* 53(3): 461-478, 12 figs. Aug. 1972. *WR 147: 24*
[Univ. R.I., Kingston.] Abstract: Tracking data from voles *(Microtus pennsylvanicus)* and from its occasional predator, the short-tailed shrew *(Blarina brevicauda)*, confined together in an outdoor enclosure (20 by 40 meters), demonstrated that voles tend to avoid places frequented by shrews. Laboratory tests indicated that voles avoid shrews more than they avoid laboratory mice and that a vole's response to a shrew is similar to its response to shrew odor. One of the testing procedures generated U-shaped curves of exploratory behavior.

Gottschalk, Cord. MITTEILUNGEN ZUM RUECKGANG DES FLEDERMAUSBESTANDES IN OSTTHUERINGEN. [THE DECREASE OF THE BAT POPULATION IN EAST THURINGIA (EAST GERMANY).] *Milu* 3(2): 160-176, illus. 1971. [From Biol. Abstr. 54(5), 1972. In German.] *WR 147: 24*
[Veterinaeruntersuchungs-Tiergesundheitsamt Jena, Jena, Germany.] The empty roosts due to disease, bad weather conditions and human interference in East Thuringia are reported.

Gould, Edwin. STUDIES OF MATERNAL-INFANT COMMUNICATION AND DEVELOPMENT OF VOCALIZATIONS IN THE BATS *MYOTIS* AND *EPTESICUS*. *Comm. Behav. Biol. Part A Orig. Artic.* 5(5): 263-313, illus. 1971. [From Biol. Abstr. 54(3), 1972.] *WR 147: 24*
[Johns Hopkins Univ., Baltimore, Md.]

Greenhall, Arthur M. THE PROBLEM OF BAT RABIES, MIGRATORY BATS, LIVESTOCK AND WILDLIFE. *Trans. N. Am. Wildl. Nat. Resour. Conf.* 37: 287-293. 1972. *WR 147: 24*
[U.S. Natl. Mus., Washington, D.C.]

Groschaft, J., and F. Tenora. *ACANTHATRIUM BISUTUM* SP. N. (TREMATODA), A PARASITE OF BATS (CHIROPTERA) IN AFGHANISTAN. *Folia Parasitol.* (Prague) 18(3): 206. 1971. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 24*

Guzman, Arturo Jimenez. NUEVOS REGISTROS DE MURCIELAGOS PARA NUEVO LEON, MEXICO. [NEW RECORDS OF BATS IN NUEVO LEON, MEXICO.] *An. Inst. Biol. Univ. Nac. Auton. Mex. Ser. Zool.* 39(1): 133-144, illus. 1968. [From Biol. Abstr. 54(4), 1972. In Spanish with English summ.] *WR 147: 24*
[Univ. Nuevo Leon, Monterrey, Mexico.] Includes 10 new records of bats from Nuevo Leon, and clarifies some areas of geographical distribution of species that live in northeastern Mexico.

Howell, Donna Jeanne. PHYSIOLOGICAL ADAPTATIONS IN THE SYNDROME OF CHIROPTEROPHILY WITH EMPHASIS ON THE BAT *LEPTONYCTERIS* LYDEKKER. *Ph.D. thesis, Univ. Ariz.* 262 p. 1972. [From Diss. Abstr. Int. B Sci. Eng. 33(3), 1972.] *WR 147: 25*

Humphrey, Stephen Reynolds. POPULATION ECOLOGY OF THE LITTLE BROWN BAT, *MYOTIS LUCIFUGUS*, IN INDIANA AND NORTH-CENTRAL KENTUCKY. *Ph.D. thesis, Okla. State Univ.* 149 p. 1971. [From Diss. Abstr. Int. B. Sci. Eng. 33(2), 1972.] *WR 147: 25*

"The ecological characteristics and interactions of *Myotis lucifugus* populations were investigated by a team of researchers from 1952 to 1969. Population size was monitored, and 22 summer populations and eight winter populations were sampled. Phenological patterns, changes in age and sex structure, and reproductive events were documented with 408 population samples. Individual histories of movements and survival were kept on 71,706 banded animals."

Humphrey, Stephen R. ADAPTATIONS OF REFUGING FREETAILED BATS. *Bat Res. News* 13(2): 19-26. Apr. 1972. *WR 147: 25*

[Univ. Fla., Gainesville.] *"Tadarida brasiliensis mexicana."*

Jimenez, Arturo. HIPERPARASITOSIS EN *PIPISTRELLUS HESPERUS* (CHIROPTERA). [HYPERPARASITISM ON *PIPISTRELLUS HESPERUS* (CHIROPTERA).] *An. Inst. Biol. Univ. Nac. Auton. Mex. Ser. Zool.* 39(1): 165-166, illus. 1968. [From Biol. Abstr. 54 (6), 1972. In Spanish.] *WR 147: 25*

[Univ. Nuevo Leon, Monterrey, Mexico.] Numerous larvae (56) of the superfamily Spiruroidea were found on a specimen of *P. hesperus* from Nuevo Leon, Mexico.

Kennedy, Michael L., and Troy L. Best. FLIGHT SPEED OF THE GRAY BAT, *MYOTIS GRISESCENS*. *Am. Midl. Nat.* 88(1): 254-255. July 1972. *WR 147: 25*

[Univ. Okla., Norman.] Abstract: The flight speed of the gray bat, *Myotis grisescens*, was calculated at 11.14 mph when measured under natural conditions in a cave in Perry Co., Tennessee.

Khotenovskii, I. A. [EVOLUTION OF TREMATODES FROM BATS.] *Parazitologiya* 6 (1): 79-82, illus. 1972. [From Biol. Abstr. 54(6), 1972. In Russian with English summ.] *WR 147: 25*

[Zool. Inst., Acad. Sci. USSR, Leningrad, USSR.] Problems of the evolution of feeding, morphology and peculiarities of host-parasite relationships between members of some families of trematodes which are parasites of the intestine of bats are discussed.

Kolodenko, A. I. [CONCERNING THE DISTRIBUTION AND ECOLOGY OF *SUNCUS ETRUSCUS* SAVI (1822) IN TURKMENIA.] *Izv. Akad. Nauk Turkm. SSR Ser. Biol. Nauk* 3: 60-64. 1971. [From J. Mammal. 53(2, suppl.), 1972. In Russian with English summ.] *WR 147: 25*

Kretschmann, Kurt. MASSNAHMEN ZUR ERMITTLUNG UND ZUM SCHUTZ VON FLEDERMAUSEN IN EINEM KREISGEBIET (BAD FREIENWALDE). [IDENTIFICATION AND PROTECTION OF BATS IN BAD FREIENWALDE, EAST GERMANY.] *Milu* 3(2): 197-199. 1971. [From Biol. Abstr. 54(5), 1972. In German.] *WR 147: 25*

[Bad Freienwalde, Germany.] In Bad Freienwalde, the following bats were found: *Myotis daubentoni, M. myotis, Nyctalus noctula, Eptesicus serotinus, Pipistrellus pipistrellus, Plecotus auritus* and *P. austriacus*.

Kristoffersson, Rolf. A NOTE ON THE AGE DISTRIBUTION OF HEDGEHOGS *(ERINACEUS EUROPAEUS)* IN FINLAND. *Ann. Zool. Fenn.* 8(4): 554-557, illus. 1971. [From Biol. Abstr. 54(1), 1972.] *WR 147: 25*

[Univ. Helsinki, Helsinki, Finland.]

Linares, Omar J. A NEW SUBSPECIES OF FUNNEL-EARED BAT *(NATALUS STRAMINEUS)* FROM WESTERN VENEZUELA. *Bull. S. Calif. Acad. Sci.* 70(2): 81-84, illus. 1971. [From Biol. Abstr. 54(5), 1972.] *WR 147: 26*
[3, Rue Ecoffes, Paris, France.]

Madhavan, A. BREEDING HABITS IN THE INDIAN VESPERTILIONID BAT, *PIPISTRELLUS CEYLONICUS CHRYSOTHRIX* (WROUGHTON). *Mammalia* 35(2): 283-306, illus. 1971. [From Biol. Abstr. 54(4), 1972. In English with French summ.] *WR 147: 26*
[Inst. Sci., Nagpur, Maharashtra, India.]

Mock, O. B., and V. K. Kivett. OBSERVATIONS ON THE REPRODUCTIVE BEHAVIOR OF THE LEAST SHREW. *Bull. Ecol. Soc. Am.* 52(4): 23. Dec. 1971. [From J. Mammal. 53(2, suppl.), 1972. Abstract only.] *WR 147: 26*

Niort, P.-L. CONTRIBUTION A LA CONNAISSANCE DES CHIROPTERES DU BURUNDI (AFRIQUE CENTRALE). [INFORMATION ON CHIROPTERA OF BURUNDI (CENTRAL AFRICA).] *Ann. Soc. Roy. Zool. Belg.* 100(4): 247-274, illus. 1970. [From Biol. Abstr. 54(5), 1972. In French with English summ.] *WR 147: 26*
A list of the records, with some remarks on the circumstances of the captures and behavior of the bats is given. In Burundi there are at least 7 families, 15 genera or subgenera and 18 spp. of Chiroptera.

Nosek, J., O. Kozuch, and J. Chmela. CONTRIBUTION TO THE KNOWLEDGE OF HOME RANGE IN COMMON SHREW *SOREX ARANEUS* L. *Oecologia* (Berlin) 9(1): 59-63, illus. 1972. [From Biol. Abstr. 54(6), 1972.] *WR 147: 26*
[Slovak Acad. Sci., Bratislava, Czechoslovakia.]

Ohlendorf, Harry M. OBSERVATIONS ON A COLONY OF *EUMPOS PEROTIS* (MOLOSSIDAE). *Southwestern Nat.* 17(3): 297-300. 6 Oct. 1972. *WR 147: 26*
[Patuxent Wildl. Res. Cent., Laurel, Md.]

Piccinini, Rogerio Serrao. CONTRIBUICAO PARA O COMBATE AOS MORCEGOS HEMATOFAGOS (CHIROPTERA). [CONTRIBUTION TO THE CONTROL OF BLOOD SUCKING BATS (CHIROPTERA).] *Rev. Bras. Biol.* 31(3): 291-298, illus. 1971. [From Biol. Abstr. 54(5), 1972. In Portuguese with English summ.] *WR 147: 26*
[Mus. Goeldi, Belem, Para, Brazil.] Abstract: A modification of the Constantine Trap for bat capture and a suggestion to use this trap against vampire-bats are presented.

Racey, P. A., and R. E. Stebbings. BATS IN BRITAIN—A STATUS REPORT. *Oryx* 11(5): 319-327, illus. May 1972. *WR 147: 26*
[Univ. Liverpool, Liverpool, England.] Of 14 spp. of British bats, the status of two, the greater horseshoe *(Rhinolophus ferrumequinum)* and mouse-eared *(Myotis myotis)* bats, is precarious.—From summ.

Rakhmatulina, I. K. [HIBERNATION OF BATS IN AZERBAIJAN.] *Zool. Zh.* 50(9): 1420-1422. Sept. 1971. [From J. Mammal. 53(2, suppl.), 1972. In Russian with English summ.] *WR 147: 26*

Ramirez-Pulido, Jose, and Ticul Alvarez. NOTAS SOBRE LOS MURCIELAGOS DEL GENERO *LEPTONYCTERIS* EN MEXICO, CON LA DESIGNACION DEL LECTOTIPO DE *L. YERBABUENAE* MARTINEZ Y VILLA, 1940. [NOTES ON THE BATS OF THE GENUS *LEPTONYCTERIS* IN MEXICO, WITH DESIGNATION OF *L. YERBABUENAE* MARTINEZ AND VILLA, 1940 AS THE LECTOTYPE.] *Southwest. Nat.* 16(3/4): 249-259, illus. 1972. [From Biol. Abstr. 54(4), 1972. In Spanish.] *WR 147: 26*
[Univ. Nac. Auton. Mex., Mexico City, Mexico.]

Rysavy, B. *VAMPIROLEPIS NOVADOMENSIS* SP. N. (HYMENOLEPIDIDAE), A NEW CESTODE SPECIES FROM *MYOTIS MYSTACINUS*. *Folia Parasitol.* (Prague) 18(3): 281-284. 1971. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 26*

Schmidt, U., A. M. Greenhall, and W. L.-Forment. OEKOLOGISCHE UNTERSUCHUNGEN DER VAMPIRFLEDERMAEUSE *(DESMODUS ROTUNDUS)* IM STAATE PUEBLA, MEXIKO. [AN ECOLOGICAL STUDY OF THE VAMPIRE BAT *(DESMODUS ROTUNDUS)* IN THE STATE OF PUEBLA, MEXICO.] *Z. Saeugetierkd.* 36(6): 360-370, illus. 1971. [From Biol. Abstr. 54 (5), 1972. In German with English summ.] *WR 147: 27*
[Univ. Bonn, Bonn, Germany.] Abstract: Of 170 *D. rotundus* banded in eastern Mexico, about 25% were recaptured at the original collecting sites in the open field. Only four banded bats were recaptured in different roosts up to five km away. During heavy rain and bright moonlight nights nearly no vampires were netted. To demonstrate the value of conventional control methods and to attempt a method of estimating the vampire bat population in the area, more than 500 *Desmodus* were collected from cave and tree roosts. This reduced the vampire predation to cattle by 80%, giving relief for about 10 mo. Swiss breeds were attacked the most and Zebu least. In a homing experiment two vampires returned to the roost after two and three days from a distance of 6 km, one female after 5 mo. from 30 km. This suggests that a vampire bat infected with paralytic rabies could spread the disease over a large area in a short time.

Schoenfuss, Guenther. DIE BISHERIGEN NACHWEISE VON *EPTESICUS NILSSONI* (KEYSERLING U. BLASIUS 1839) AUF DEM GEBIET DER DEUTSCHEN DEMOKRATISCHEN REPUBLIK. [FORMER IDENTIFICATION OF *EPTESICUS NILSSONI* (KEYSERLING AND BLASIUS 1839) IN THE TERRITORY OF THE GERMAN DEMOCRATIC REPUBLIC.] *Milu* 3(2): 200-203. 1971. [From Biol. Abstr. 54(5), 1972. In German.] *WR 147: 27*
[Effefeld i. V., Germany.] Based on the literature, a survey is given on its known distribution.

Sebek, Zdenek. ZUR VERBREITUNG DER ALPENSPITZMAUS *(SOREX ALPINUS* SCHINZ, 1837, SORICIDAE, INSECTIVORA) IN DER TSCHECHISCHEN SOZIALISTISCHEN REPUBLIK. [ON THE DISTRIBUTION OF THE ALPINE SHREW *(SOREX ALPINUS* SCHINZ, 1837, SORICIDAE, INSECTIVORA) IN CZECHOSLOVAKIA.] *Zool. Listy* 20(4): 319-329, illus. 1971. [From Biol. Abstr. 54(3), 1972. In German with English summ.] *WR 147: 27*
[Parasitiol. Abt., Bezirksstn. Hyg., Vrchlickeho 57, Jihlava, Czechoslovakia.]

Setzer, H. W. NEW BATS OF THE GENUS *LAEPHOTIS* FROM AFRICA (MAMMALIA: CHIROPTERA). *Proc. Biol. Soc. Washington* 84(32): 259-264, illus. 1971. [From Biol. Abstr. 54(2), 1972.] *WR 147: 27*
[Smithsonian Inst., Washington, D.C.]

Shubin, N. G. [CHIROPTERA OF WEST SIBERIA.] *Zool. Zh.* 50(8): 1262-1264. 1971. [From Biol. Abstr. 54(1), 1972. In Russian with English summ.] *WR 147: 27*
[Tomsk State Univ., Tomsk, USSR.] Eight spp. of Chiroptera occur in West Siberia: *Myotis dasycneme, M. daubentoni, M. mystacinus, Nyctalus noctula, Eptesicus nilsoni, Vespertilio murinus, Plecotus auritus* and *Murina leucogaster* of which the two latter are dwellers of mountain regions. Most animals migrate in the beginning of Sept. from the north to the south and only single specimens hibernate on the same place. Bats return in the middle of June. Young are born in the end of June to first half of July.

Sluiter, J. W., P. F. Van Heerdt, and M. Gruit. PARAMETRES DE POPULATION CHEZ LE GRAND RHINOLOPHE FER-A-CHEVAL *(RHINOLOPHUS FERRUM-EQUINUM* SCHREBER), ESTIMES PAR LA METHODE DES REPRISES APRES BAGUAGES. [POPULATION PARAMETERS IN THE GREATER HORSESHOE BAT *(RHINOLOPHUS FERRUM-EQUINUM* SCHREBER) ESTIMATED BY THE RECAPTURE AFTER BANDING METHOD.] *Mammalia* 35(2): 254-272, illus. 1971. [From Biol. Abstr. 54(4), 1972. In French with English summ.] *WR 147: 27*
[Univ. Utrecht, Utrecht, Netherlands.]

Stebbings, R. E. BAT PROTECTION AND THE ESTABLISHMENT OF A NEW CAVE RESERVE IN THE NETHERLANDS. *Stud. Speleol.* 2(3/4): 103-108, illus. 1970-71. [From Biol. Abstr. 54(1), 1972.] *WR 147: 27*
[Nat. Conserv., Norwich, England.]

Linares, Omar J. A NEW SUBSPECIES OF FUNNEL-EARED BAT *(NATALUS STRAMINEUS)* FROM WESTERN VENEZUELA. *Bull. S. Calif. Acad. Sci.* 70(2): 81-84, illus. 1971. [From Biol. Abstr. 54(5), 1972.] *WR 147: 26*
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Schoenfuss, Guenther. DIE BISHERIGEN NACHWEISE VON *EPTESICUS NILSSONI* (KEYSERLING U. BLASIUS 1839) AUF DEM GEBIET DER DEUTSCHEN DEMOKRATISCHEN REPUBLIK. [FORMER IDENTIFICATION OF *EPTESICUS NILSSONI* (KEYSERLING AND BLASIUS 1839) IN THE TERRITORY OF THE GERMAN DEMOCRATIC REPUBLIC.] *Milu* 3(2): 200-203. 1971. [From Biol. Abstr. 54(5), 1972. In German.] *WR 147: 27*

[Effefeld i. V., Germany.] Based on the literature, a survey is given on its known distribution.

Sebek, Zdenek. ZUR VERBREITUNG DER ALPENSPITZMAUS *(SOREX ALPINUS* SCHINZ, 1837, SORICIDAE, INSECTIVORA) IN DER TSCHECHISCHEN SOZIALISTISCHEN REPUBLIK. [ON THE DISTRIBUTION OF THE ALPINE SHREW *(SOREX ALPINUS* SCHINZ, 1837, SORICIDAE, INSECTIVORA) IN CZECHOSLOVAKIA.] *Zool. Listy* 20(4): 319-329, illus. 1971. [From Biol. Abstr. 54(3), 1972. In German with English summ.] *WR 147: 27*

[Parasitiol. Abt., Bezirksstn. Hyg., Vrchlickeho 57, Jihlava, Czechoslovakia.]

Setzer, H. W. NEW BATS OF THE GENUS *LAEPHOTIS* FROM AFRICA (MAMMALIA: CHIROPTERA). *Proc. Biol. Soc. Washington* 84(32): 259-264, illus. 1971. [From Biol. Abstr. 54(2), 1972.] *WR 147: 27*

[Smithsonian Inst., Washington, D.C.]

Shubin, N. G. [CHIROPTERA OF WEST SIBERIA.] *Zool. Zh.* 50(8): 1262-1264. 1971. [From Biol. Abstr. 54(1), 1972. In Russian with English summ.] *WR 147: 27*

[Tomsk State Univ., Tomsk, USSR.] Eight spp. of Chiroptera occur in West Siberia: *Myotis dasycneme, M. daubentoni, M. mystacinus, Nyctalus noctula, Eptesicus nilsoni, Vespertilio murinus, Plecotus auritus* and *Barbastella leucogaster* of which the two latter are dwellers of mountain regions. Most animals migrate in the beginning of Sept. from the north to the south and only single specimens hibernate on the same place. Bats return in the middle of June. Young are born in the end of June to first half of July.

Sluiter, J. W., P. F. Van Heerdt, and M. Gruit. PARAMETRES DE POPULATION CHEZ LE GRAND RHINOLOPHE FER-A-CHEVAL *(RHINOLOPHUS FERRUM-EQUINUM* SCHREBER), ESTIMES PAR LA METHODE DES REPRISES APRES BAGUAGES. [POPULATION PARAMETERS IN THE GREATER HORSESHOE BAT *(RHINOLOPHUS FERRUM-EQUINUM* SCHREBER) ESTIMATED BY THE RECAPTURE AFTER BANDING METHOD.] *Mammalia* 35(2): 254-272, illus. 1971. [From Biol. Abstr. 54(4), 1972. In French with English summ.] *WR 147: 27*

[Univ. Utrecht, Utrecht, Netherlands.]

Stebbings, R. E. BAT PROTECTION AND THE ESTABLISHMENT OF A NEW CAVE RESERVE IN THE NETHERLANDS. *Stud. Speleol.* 2(3/4): 103-108, illus. 1970-71. [From Biol. Abstr. 54(1), 1972.] *WR 147: 27*

[Nat. Conserv., Norwich, England.]

Strylov, P. P. [ECOLOGICAL OBSERVATIONS ON WINTER HIBERNATION OF BATS (CHIROPTERA, VESPERTILIONIDAE) OF LENINGRAD REGION.] *Trudy Zool. Inst. Akad. Nauk SSSR* 48: 251-303. 1971. [From J. Mammal. 53(2, suppl.), 1972. In Russian.] *WR 147: 28*

Studier, Eugene H. SOME PHYSICAL PROPERTIES OF THE WING MEMBRANES OF BATS. *J. Mammal.* 53(3): 623-625. Aug. 1972. *WR 147: 28*
[Univ. Mich., Flint.]

Thomas, Maurice Earl. PRELIMINARY STUDY OF THE ANNUAL BREEDING PATTERNS AND POPULATION FLUCTUATIONS OF BATS IN THREE ECOLOGICALLY DISTINCT HABITATS IN SOUTHWESTERN COLOMBIA. *Ph.D. thesis, Tulane Univ.* 168 p. 1972. [From Diss. Abstr. Int. B Sci. Eng. 33(3), 1972.] *WR 147: 28*

Villa, Bernardo, and Jose Ramirez Pulido. *DICLIDURUS VIRGO* THOMAS, EL MURCIELAGO BLANCO, EN LA COSTA DE NAYARIT, MEXICO. [*DICLUDURUS VIRGO* THOMAS, THE WHITE BAT ON THE COAST OF NAYARIT, MEXICO.] *An. Inst. Biol. Univ. Nac. Auton. Mex. Ser. Zool.* 39(1): 155-158. 1968. [From Biol. Abstr. 54(4), 1972. In Spanish with English summ.] *WR 147: 28*
[Univ. Nac. Auton. Mexico, Mexico City, Mexico.]

Walley, Harlan D., and William L. Jarvis. LONGEVITY RECORD FOR *PIPISTRELLUS SUBFLAVUS*. *Trans. Ill. State Acad. Sci.* 64(3): 305. 1971. [From Biol. Abstr. 54(5), 1972.] *WR 147: 28*
[Northern Ill. Univ., De Kalb.]

Yoshida, H. [SMALL MAMMALS OF MT. KIYOMIZU, FUKUOKA PREF. 2. REPRODUCTION OF THE SHREW MOLE, *UROTRICHUS TALPOIDES*.] *J. Mammal. Soc. Japan* 5(3): 85-90. June 1971. [From J. Mammal. 53(2, suppl.), 1972. In Japanese with English summ.] *WR 147: 28*

RABBITS & PIKAS

Andersen, John., and Birger Jensen. THE WEIGHT OF THE EYE LENS IN THE EUROPEAN HARES OF KNOWN AGE. *Acta Theriol.* 17(8): 87-92, 2 figs. May 1972. In English with Polish summ. *WR 147: 28*
[Game Biol. Sta., Kalø, Rønde, Denmark.] Abstract: The eye lenses were collected from 90 hares of known age. Those which were preserved 4 days after an animal's death showed signs of incipient decay, especially in deterioration of the internal capsule. However, the associated weight loss of the lenses was only a few percent compared with freshly preserved lenses. Although lens weight increases with age, it is only possible to separate hares of the most recent generation from others on the basis of lens weight differences.

Arnastauskienė, T., and J. Kazlauskas. [ON THE FAUNA OF COCCIDIA AND HELMINTHS IN THE HARE IN THE LITHUANIAN SSR.] *Acta Parasitol. Lituanica* 10: 85-93. 1970. In Russian with Lithuanian and English summ. *WR 147: 28*

Brocke, Rainer H. A LIVE SNARE FOR TRAP-SHY SNOWSHOE HARES. *J. Wildl. Manage.* 36(3): 988-991, 2 figs. July 1972. *WR 147: 28*
[State Univ. Coll. For. Syracuse, Newcomb, N.Y.] Abstract: An effective technique using live snares was developed and tested in 28 captures of snowshoe hares *(Lepus americanus)*. During the final testing period, 100 percent live capture was attained. Live snares were more effective than box traps in overall capture success, particularly in catching previously uncaptured hares. Advantages of the technique are low cost, extreme portability, and superior effectiveness. Disadvantages include the skill and longer time necessary to make a snare set. This technique is recommended as a supplement to box trapping.

Caboń-Raczyńska, Krystyna, and Jan Raczyński. METHODS FOR DETERMINATION OF AGE IN THE EUROPEAN HARE. *Acta Theriol.* 17(7): 75-86, 4 figs. May 1972. In English with Polish summ. *WR 147: 29*
[Polish Acad. Sci., Białowieża, Poland.] *"Lepus europaeus."*

Chapman, Joseph A., and Amy L. Harman. THE BREEDING BIOLOGY OF A BRUSH RABBIT POPULATION. *J. Wildl. Manage.* 36(3): 816-823, 1 fig. July 1972. *WR 147: 29*
[Univ. Md., La Vale.] Abstract: The breeding biology of the northernmost subspecies of the brush rabbit *(Sylvilagus bachmani uerooolor)* was studied between June 1967 and August 1969. Female brush rabbits in Oregon were pregnant from mid-February to mid-August. Sexually active males first appeared in the population in January, with no males sexually active after July. The breeding season in Oregon started about 45 days later than in California but appeared to be about the same in total length. The mean litter size was 2.67 in 1968 and 3.27 in 1969. Litter sizes were smaller in Oregon than in California. There appeared to be an inverse relationship between litter size and latitude. The mean ovulation rate for female brush rabbits in Oregon was 3.39. It was calculated that 16.3 percent of the ova failed to implant and that 15.5 percent of the embryos were resorbed. No evidence of juvenile breeding was found. Adult female brush rabbits were estimated to produce 15.18 young annually.

DeCalesta, David S. A LITERATURE REVIEW ON COTTONTAIL FEEDING HABITS. *Colo. Div. Game Fish Parks Spec. Rep.* no. 25. v + 15 p., 1 fig. Aug. 1971. Price $1.00. *WR 147: 29*
Abstract: Cottontail rabbit *(Sylvilagus* spp.) feeding characteristics capable of influencing food habits information collection are discussed. Of three food habits techniques compared, microscopic examination of stomach contents and/or fecal material appears best adapted for general use, but has yet to prove its feasibility with winter diets comprised of bark, buds, and twigs. Although all methods are capable of producing reliable qualitative information, quantitative derivations lack peremptory validation. Cottontails exhibit similar food habits regardless of species or geographic location. Application of information about cottontail food habits appears best-suited to integration into ecosystematic investigations rather than in species management.

Dunsmore, J. D. A STUDY OF THE BIOLOGY OF THE WILD RABBIT IN CLIMATICALLY DIFFERENT REGIONS IN EASTERN AUSTRALIA: IV. THE RABBIT IN THE SOUTH COASTAL REGION OF NEW SOUTH WALES, AN AREA IN WHICH PARASITES APPEAR TO EXERT A POPULATION-REGULATING EFFECT. *Australian J. Zool.* 19(4): 355-379, illus. 1971. [From Biol. Abstr. 54(5), 1972.] *WR 147: 29*
[Div. Wildl. Res., CSIRO, Lyneham, Australia.] In climatically normal years *Eimeria stiedae* operates as a density-dependent mortality factor on the young kittens in that region.

Goodrich, Benjamin S., and Roman Mykytowycz. INDIVIDUAL AND SEX DIFFERENCES IN THE CHEMICAL COMPOSITION OF PHEROMONE-LIKE SUBSTANCES FROM THE SKIN GLANDS OF THE RABBIT, *ORICTOLAGUS CUNICULUS*. *J. Mammal.* 53(3): 540-548, 4 figs. Aug. 1972. *WR 147: 29*
[McMaster Lab., Glebe, New South Wales, Australia.]

Kundaeli, John N., and Hudson G. Reynolds. DESERT COTTONTAIL USE OF NATURAL AND MODIFIED PINYON-JUNIPER WOODLAND. *J. Range Manage.* 25(2): 116-118, illus. 1972. [From Biol. Abstr. 54(4), 1972.] *WR 147: 29*
[Coll. Afr. Wildl., Moshi, Tanzania.] *"Sylvilagus cadubani."*

Millar, John S., and Fred C. Zwickel. DETERMINATION OF AGE, AGE STRUCTURE, AND MORTALITY OF THE PIKA, *OCHOTONA PRINCEPS* (RICHARDSON). *Canadian J. Zool.* 50 (2): 229-232, illus. 1972. [From Biol. Abstr. 54(2), 1972. In English with French summ.] *WR 147: 29*
[Univ. Western Ontario, London, Ontario, Canada.]

Naumov, N. L., and A. A. Lur'e. [MARKING *OCHOTONA ALPINA* WITH Co^{60}.] *Zool. Zh.* 50(11): 1728-1731, illus. 1971. [From Biol. Abstr. 54(5), 1972. In Russian.] *WR 147: 30*

[Inst. Med. Parasitol. Trop. Med., Minist. Health USSR, Moscow, USSR.] The marking of *O. alpina* by Co^{60} with the activity of 57 mg-eq Ra has allowed to trace the animal both on the surface and among stones and underground. During the four days of observation (21 hr 17 min in all) migratory routes, feeding and resting places were observed. The nest and droppings of three small haystacks regularly used by the animal for rest were found.

Newhouse, V. F., W. Burgdorfer, and D. Corwin. FIELD AND LABORATORY STUDIES ON THE HOSTS AND VECTORS OF THE SNOWSHOE HARE STRAIN OF CALIFORNIA VIRUS. *Mosq. News* 31(3): 401-408, illus. 1971. [From Biol. Abstr. 54(3), 1972.] *WR 147: 30*

[Cent. Dis. Control, Atlanta, Ga.]

Pielowski, Zygmunt. HOME RANGE AND DEGREE OF RESIDENCE OF THE EUROPEAN HARE. *Acta Theriol.* 17(9): 93-103, 1 fig. May 1972. In English with Polish summ. *WR 147: 30*

[Polish Hunting Assoc., Res. Sta., Czempiń n/Boznań, Poland.]

Spagnesi, Mario. BREVI OSSERVAZIONI SULL'ALLEVAMENTO E SULL'ACCRESCIMENTO DEI GIOVANI DI LEPRE EUROPEA *(LEPUS EUROPAEUS* PALLAS*)* NATI IN CATTIVITÀ. [BRIEF OBSERVATIONS ON THE REARING AND INCREASE OF YOUNG EUROPEAN HARE *(LEPUS EUROPAEUS)* BORN IN CAPTIVITY.] *Ric. Biol. Selvaggina* (Bologna) 53. 29 p., [8] figs. 1972. In Italian with French, German and English summ. *WR 147: 30*

"Technical considerations about the breeding of the young of the European hare born in strict captivity are contained in this paper. They are the result of a careful study on the behaviour of leverets and on weight gains."

Verts, B. J., Stanley A. Ludwig, and William Graf. DISTRIBUTION OF EASTERN COTTONTAIL RABBITS IN LINN COUNTY, OREGON, 1953-1970. *Murrelet* 53(2): 25-26. May-Aug. 1972. *WR 147: 30*

[Oreg. State Univ., Corvallis.] *"Sylvilagus floridanus."*

Williams, R. T., P. J. Fullagar, C. C. Davey, and C. Kogon. FACTORS AFFECTING THE SURVIVAL TIME OF RABBITS IN A WINTER EPIZOOTIC OF MYXOMATOSIS AT CANBERRA, AUSTRALIA. *J. Appl. Ecol.* 9(2): 399-410, 3 figs. Aug. 1972. *WR 147: 30*

[CSIRO, P.O. Box 84, Lyneham, Canberra, Australia.] Summary: An outbreak of myxomatosis which occurred at Canberra, A.C.T., in the winter of 1969 is analysed. The first case was observed on 7 July, and the last on 20 October. There were 255 individually marked rabbits present at the start of the epizootic; 230 (90%) are known to have contracted the disease. Sixty out of eighty-nine (67%) rabbits born during the epizootic were observed with myxomatosis. None of the animals observed with myxomatosis survived. Of all the 344 animals in the population, only two kittens survived. The remaining fifty-two rabbits disappeared without being observed with myxomatosis, but probably died of it. A total of 237 of the 277 marked rabbits observed with myxomatosis could be traced, maternally, through three generations, to nine of the twenty-two does which initiated the population in 1966. Analyses of the variations in the number of days for which the rabbits showed signs of the disease did not reveal any significant differences between (a) the offspring of the nine does, (b) the generation to which the rabbit belonged, (c) the age of the rabbit, and (d) their sex. There was a highly significant correlation between the duration of sickness, and the week of the epizootic during which the rabbit first showed symptoms. This was also correlated with changes in the ambient temperature. Greatest survival times were obtained during periods of temperature stability, and survival decreased as major shifts in temperature, denoted by gross differences between mean weekly temperatures, occurred.

Andrzejewski, Roman, and Eva Rajska. TRAPPABILITY OF BANK VOLE IN PITFALLS AND LIVE TRAPS. *Acta Theriol.* 17(4): 41-56, 5 figs. May 1972. In English with Polish summ. *WR 147: 31*

[Polish Acad. Sci., Warsaw, Poland.] Abstract: Studies were made in an isolated natural population of *Clethrionomys glareolus* of the trappability of different age groups of individuals, using either live traps or pitfalls, or both kinds of traps simultaneously. Trappability of bank voles in pitfalls is lower than in live traps. The older the group, the higher the trappability of different groups of individuals in live traps, whereas trappability in pitfalls does not exhibit such differentiation. When live traps and pitfalls are used together differentiation of trappability in live traps is the same as when these traps are used on their own. Trappability in live traps increases with the age of individuals, while that in pitfalls decreases. Individuals introduced into the population are characterized, regardless of their age, by trappability similar to that of the group of youngest individuals in the population. As the age group grows older differences in trappability increase among its members. It was found that an individual's weight does not determine its trappability. The results obtained are in agreement with Gliwicz's hypothesis (1970) suggesting that the trappability of different age groups is due to the social organization of the population.

Baccus, J. T., R. E. Greer, and G. G. Raun. ADDITIONAL RECORDS OF *BAIOMYS TAYLORI* (RODENTIA: CRICETIDAE) FOR NORTHERN TEXAS. *Tex. J. Sci.* 23(1): 148-149. Oct. 1971. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 31*

Bajalska, Gabriela, and Joanna Gliwicz. GROWTH AND REPRODUCTION OF FEMALE BANK VOLES UNDER FIELD CONDITIONS. *Acta Theriol.* 17(3): 33-40, 2 figs. May 1972. In English with Polish summ. *WR 147: 31*

[Polish Acad. Sci., Warsaw, Poland.] *"Clethrionomys glareolus."*

Bienek, Gerhard K., and Albert W. Grundmann. BURROWING HABITS OF TWO SUBSPECIES OF *DIPODOMYS MERRIAMI* IN CALIFORNIA AND UTAH. *Great Basin Nat.* 31(3): 190-192. 1971. [From Biol. Abstr. 54(3), 1972.] *WR 147: 31*

[Univ. Utah, Salt Lake City.]

Bol'shakov, V. N. [INTERNAL CHARACTERISTICS OF THE GOBI-ALTAI HIGH-MOUNTAIN VOLE.] *Ekologiya* 1(1): 97-98. 1971. [From Biol. Abstr. 54(5), 1972. In Russian.] *WR 147: 31*

[Inst. Plant Anim. Ecol., Ural Branch Acad. Sci. USSR, Sverdlovsk, USSR.]

Bol'shakov, V. N. [SIMILARITY OF 2 ISOLATED POPULATIONS OF THE LONG-CLAWED MOLE-VOLE.] *Ekologiya* 1(3): 87-89. 1970. [From Biol. Abstr. 54(4), 1972. In Russian.] *WR 147: 31*

[Inst. Plant Anim. Ecol., Ural Branch, Acad. Sci. USSR, Sverdlovsk, USSR.] *"Prometheomys schaposchnikowi."*

Bradfield, M. RODENTS OF THE HOPI REGION, IN RELATION TO HOPI FARMING. *Plateau* 44(2): 75-77. Fall 1971. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 31*

Chandrahas, R. K., and A. K. Krishnaswami. HOST PREFERENCE OF SIPHONAPTERA ON WILD RODENTS IN THE SOUTH INDIAN PLAGUE FOCUS. *Indian J. Med. Res.* 59(11): 1808-1815. 1971. [From Biol. Abstr. 54(6), 1972.] *WR 147: 31*

[Natl. Inst. Commun. Dis., New Delhi, Delhi, India.]

Clough, G. C. BEHAVIORAL RESPONSES OF NORWEGIAN LEMMINGS TO CROWDING. *Bull. Ecol. Soc. Am.* 52(4). p. 38. Dec. 1971. [From J. Mammal. 53(2, suppl.), 1972. Abstract only.] *WR 147: 31*

Cole, L. R. A COMPARISON OF *MALACOMYS LONGIPES* AND *MALACOMYS EDWARDSI* (RODENTIA: MURIDAE) FROM A SINGLE LOCALITY IN GHANA. *J. Mammal.* 53(3): 616-619. Aug. 1972. *WR 147: 31*

[P.O. Box 30148, Nairobi, Kenya.]

Congdon, Justin D. POPULATION ESTIMATE AND DISTRIBUTION OF THE MORRO BAY KANGAROO RAT 1971. *Calif. Dep. Fish Game Wildl. Manage. Adm. Rep.* no. 71-11. 13 p., 3 figs. Dec. 1971. *WR 147: 32*
The Morro Bay kangaroo rat *(Dipodomys heermanni morroensis)* was reported in 1960 to occupy approximately 4.8 square miles in San Luis Obispo County at the south end of Morro Bay. The present study estimates the total population to be 3,000 kangaroo rats on 1.75 square miles as compared to 8,000 over 4.8 square miles in 1957.--From abstr.

de Kock, L. L., and I. Rohn. OBSERVATIONS ON THE USE OF THE EXERCISE-WHEEL IN RELATION TO THE SOCIAL RANK AND HORMONAL CONDITIONS IN THE BANK VOLE *(CLETHRIONOMYS GLAREOLUS)*, AND THE NORWAY LEMMING *(LEMMUS LEMMUS)*. *Z. Tierpsychol.* 29 (2): 180-195. Sept. 1971. [From J. Mammal. 53(2, suppl.), 1972. In (English) with German summ.] *WR 147: 32*

Delany, M. J. THE BIOLOGY OF SMALL RODENTS IN MAYANJA FOREST, UGANDA. *J. Zool.* 165(1): 85-129. Sept. 1971. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 32*

Dewsbury, D. A. COPULATORY BEHAVIOR OF *NEOTOMA ALBIGULA* IN RELATION TO THAT OF OTHER MUROID RODENTS. *Bull. Ecol. Soc. Am.* 52(4). p. 30. Dec. 1971. [From J. Mammal. 53(2, suppl.), 1972. Abstract only.] *WR 147: 32*

Dufour, Bernard. DONNEES QUANTITATIVES SUR LA CONSTRUCTION DU TERRIER CHEZ *APODEMUS SYLVATICUS* L. (MULOT SYLVESTRE). MAMMALIA, MURIDAE. [QUANTITATIVE DATA ON THE CONSTRUCTION OF THE BURROW OF *APODEMUS SYLVATICUS* L. (FIELD MOUSE) MAMMALIA, MURIDAE.] *Rev. Suisse Zool.* 568-571, illus. 1971. [From Biol. Abstr. 54(5), 1972. In French.] *WR 147: 32*
[Univ. Lausanne, Lausanne, Switzerland.]

Dunaway, P. B., J. D. Story, J. T. Kitchings III, and J. A. Payne. SEASONAL ALTERATIONS IN RODENT BLOOD. *Oak Ridge Natl. Lab. U.S. A.E.C.* 89 p., 4 figs. Sept. 1972. *WR 147: 32*
Seasonal hematological changes during one year for the following eight spp. of rodents in free-ranging populations on the Oak Ridge Atomic Energy Reservation in East Tennessee: *Reithrodontomys humulis, Peromyscus leucopus, Oshrotomys nuttalli, Microtus pinetorum, Mus musculus, Marmota monax, Sigmodon hispidus,* and *Ondatra zibethicus.*--From abstr.

Edmonds, Vaughan W., and Daniel S. Fertig. LONGEVITY OF THE POCKET MOUSE, *PEROGNATHUS LONGIMEMBRIS*. *Southwestern Nat.* 17(3): 300-301. 6 Oct. 1972. *WR 147: 32*
[Millikan High School, Long Beach, Calif.] "The actual lifespan of this animal was longer than the 8 year 1 month period of our observation as it was mature at the time of capture and was roughly three times longer than that predicted for small mice."

Figelis, Y. K., N. N. Poltavtsev, and A. S. Korobeinikova. [CHARACTERISTICS OF THE REPRODUCTION OF THE PERSIAN JIRD *MERIONES PERSICUS* BLANFORT (RODENTIA, CRICETIDAE) IN EASTERN TRANSCAUCASIA.] *Ekologiya* 1(4): 59-67, illus. 1970. [From Biol. Abstr. 54(5), 1972. In Russian.] *WR 147: 32*

Folitarek, S. S., editor. [ECOLOGY OF AQUATIC RODENTS AND THEIR CONTROL BY TRAPPING IN SIBERIA.] *Izdat. "Nauka" Sibirskoe Otdel.* (Novosibirsk). 415 p., illus. 1971. Price 1 ruble, 70 kopecks. In Russian. *WR 147: 32*

Gagy, Ronald. COMPARATIVE NICHE UTILIZATION BY TWO SPECIES OF KANGAROO RATS (GENUS *DIPODOMYS*). *Ph.D. thesis, N. Mex. State Univ.* 81 p. 1972. [From Diss. Abstr. Int. B Sci. Eng. 33(2), 1972.] *WR 147: 32*
D. merriami and *D. ordii* are well separated ecologically, and there is little or no reason to consider them to be competing with one another.

Gashwiler, Jay S. LIFE HISTORY NOTES ON THE OREGON VOLE, *MICROTUS OREGONI*. *J. Mammal.* 53(3): 558-569, 2 figs. Aug. 1972. *WR 147: 33*
[Bur. Sport Fish. & Wildl., 1027 Trenton Ave., Bend, Oreg.] Life history and population data and other information were obtained from 713 Oregon voles (*Microtus oregoni oregoni*) captured in poor habitat in western Oregon from 1952 to 1967.--From abstr.

German, A. L. [THE EVOLUTION OF NEST-BUILDING IN RODENTS.] *Byull. Mosk. O-va. Ispyt. Prir. Otd. Biol.* 76(4): 1-15. 1971. [From *J. Mammal.* 53(2, suppl.), 1972. In Russian with English summ.] *WR 147: 33*

Ghadirian, E., and F. Arfaa. INFECTION OF THE PORCUPINE (*HISTRIX INDICA*) WITH *TRICHOSTRONGYLUS ORIENTALIS* IN THE CASPIAN SEA AREA, IRAN. *J. Parasitol.* 58(4): 766. Aug. 1972. *WR 147: 33*
[Univ. Teheran, Teheran, Iran.]

Gladkina, T. S., and N. Y. Chentsova. [FOOD STORING BY *MICROTUS ARVALIS* PALL.] *Vestn. Zool.* 5(3): 17-22, illus. 1971. [From Biol. Abstr. 54(2), 1972. In Russian with English summ.] *WR 147: 33*
The problem on the food-storing instinct in *M. arvalis* under agricultural conditions is considered on the basis of investigations in the Kaliningrad and Leningrad regions and on literature data.

Grisham, Keith Burnice. PELAGE DEVELOPMENT AND STRUCTURAL RELATIONSHIP OF PELAGE CHANGES IN *MICROTUS MONTANUS*. *Ph.D. thesis, Tulane Univ.* 91 p. 1972. [From Diss. Abstr. Int. B Sci. Eng. 33(3), 1972.] *WR 147: 33*

Hall, E. Raymond. VARIATION IN THE BLACKISH DEER MOUSE, *PEROMYSCUS FURVUS*. *An. Inst. Biol. Univ. Nac. Auton. Mex. Ser. Zool.* 39(1): 149-154. 1968. [From Biol. Abstr. 54(4), 1972. In English with Spanish summ.] *WR 147: 33*
[Kans. Univ. Mus. Nat. Hist., Lawrence.] Six kinds of variation--seasonal, individual, secondary sexual, age, microgeographic, and geographic--are reported on for the blackish deer mouse of eastern Mexico.

Hart, Billy. DISTRIBUTION OF THE PYGMY MOUSE, *BAIOMIS TAYLORI*, IN NORTH-CENTRAL TEXAS. *Southwest. Nat.* 17(2): 213-214. 15 Sept. 1972. *WR 147: 33*
[N. Tex. State Univ., Denton.]

Hodgson, James R. LOCAL DISTRIBUTION OF *MICROTUS MONTANUS* AND *M. PENNSYLVANICUS* IN SOUTHWESTERN MONTANA. *J. Mammal.* 53(3): 487-499. Aug. 1972. *WR 147: 33*
[St. Norbert Coll., DePere, Wis.] Distributional patterns of *Microtus montanus* and *Microtus pennsylvanicus* in relation to various plant communities and to characteristics of habitats were studied in the vicinity of Bozeman, southwestern Montana, in 1968 and 1969. Preferred habitat of *M. pennsylvanicus* is in moist areas where grasses, especially *Poa pratensis*, and grass-like species are dominant plants, comprising 50 per cent or more of the vegetation by canopy coverage, and total canopy cover of all herbaceous material is at least 85 per cent. The preferred habitat of *M. montanus* is not as well delineated as that of *M. pennsylvanicus*. *Microtus montanus* appeared to have a wider ecological tolerance than *M. pennsylvanicus*, and demonstrated a direct general correlation between abundance and the dryness of the substrate.--From abstr.

Holisova, Vera. THE FOOD OF *CLETHRIONOMIS GLAREOLUS* AT DIFFERENT POPULATION DENSITIES. *Prirodoved. Pr. Ustavu Cesk. Akad. Brne* 5(10): 3-34, illus. 1971. [From Biol. Abstr. 54(6), 1972.] *WR 147: 33*
[Inst. Vertebr. Zool., Czech. Acad. Sci., Kvetna, Brno, Czechoslovakia.]

Hooper, Emmet T., and Mohammed El Hilali. TEMPERATURE REGULATION AND HABITS IN TWO SPECIES OF JERBOA, GENUS *JACULUS*. *J. Mammal.* 53(3): 574-593, 6 figs. Aug. 1972. *WR 147: 33*
[Univ. Mich., Ann Arbor.] *"Jaculus orientalis* and *J. deserti."*

Hudson, Bruce W., Martin I. Goldenberg, and Thomas J. Quan. SEROLOGIC AND BACTERIOLOGIC STUDIES ON THE DISTRIBUTION OF PLAGUE INFECTION IN A WILD RODENT PLAGUE POCKET IN THE SAN FRANCISCO BAY AREA OF CALIFORNIA. *J. Wildl. Dis.* 8(3): 278-286, 2 figs. July 1972. *WR 147: 34*
[Dept. Health, Educ. & Welfare, P.O. Box 551, Fort Collins, Colo.] Abstract: Wild rodents involved in a plague epizootic were trapped on a bimonthly schedule at 15 trap sites distributed throughout the San Bruno Mountain plague pocket located in northern San Mateo County, California. The percentage of positive sera obtained from *Microtus californicus* varied from zero in two sites in which *Y. pestis* had not been recovered from rodent flea or tissue pools to as high as 90% to 97% positives in *Microtus* trapped in four sites in which *Y. pestis* was recovered. Analysis of the data available indicates that the rate of sero-positive rodents, *Peromyscus maniculatus* and *Microtus californicus*, is correlated with gross numbers of fleas found per trapline.

Hunter, D. M., R. M. F. S. Sadleir, and J. M. Webster. STUDIES ON THE ECOLOGY OF CUTEREBRID PARASITISM IN DEERMICE. *Canadian J. Zool.* 50(1): 25-29. 1972. [From Biol. Abstr. 54(1), 1972.] *WR 147: 34*
[Simon Fraser Univ., Burnaby, British Columbia, Canada.]

Israelson, Gunnar. THE COLEOPTERAN FAUNA OF THE SUBTERRANEAN TUNNEL SYSTEMS OF SMALL MAMMALS, WITH PARTICULAR REFERENCE TO BURROWS OF VOLES IN FINLAND. *Not. Entomol.* 51(4): 113-123, illus. 1971. [From Biol. Abstr. 54(1), 1972.] *WR 147: 34*
[Paradisgatan 4, Hässleholm, Sweden.]

Jones, J. Knox, Jr., and Hugh H. Genoways. HARVEST MICE (GENUS *REITHRODONTOMIS*) OF NICARAGUA. *West. Found. Vertebr. Zool. Occas. Pap.* 2. p. 1-16, illus. 1970. [From Biol. Abstr. 54(5), 1972.] *WR 147: 34*
[Univ. Kans., Lawrence.] Six species are treated including a new species, *R. paradoxus*.

Judd, F. W., and O. J. Reichman. A COMPARISON OF THE WATER REQUIREMENTS OF THE POCKET GOPHERS, *PAPPOGEOMYS CASTANOPS* AND *THOMOMYS BOTTAE*. *Southwestern Nat.* 17(3): 302-307, 3 figs. 6 Oct. 1972. *WR 147: 34*
[Pan American Univ., Edinburg, Tex.]

Kalabukhov, N. I. [SOME ADAPTIVE FEATURES OF THE STEPPE AND YELLOW STEPPE LEMMING (*LAGURUS LAGURUS* PALL. AND *L. LUTEUS* EVERSM.).] *Ekologiya* 1(1): 69-76, illus. 1970. [From Biol. Abstr. 54(5), 1972. In Russian.] *WR 147: 34*
[Ecol.-Physiol. Lab., Antiplague Inst., Astrakhan, USSR.]

Kalela, Olavi. SEASONAL DIFFERENCES IN HABITATS OF THE NORWEGIAN LEMMING, *LEMMUS LEMMUS* (L.), IN 1959 AND 1960 AT KILPISJARVI, FINNISH LAPLAND. *Ann. Acad. Sci. Fenn. Ser. A IV Biol.* 178. p. 1-22, illus. 1971. [From Biol. Abstr. 54 (6), 1972.] *WR 147: 34*
[Univ. Helsinki, Helsinki, Finland.]

Kalela, Olavi. SEASONAL TRENDS IN THE SEX RATIO OF THE GREY-SIDED VOLE, *CLETHRIONOMYS RUFOCANUS* (SUND.). *Ann. Zool. Fenn.* 8(4): 452-455. 1971. [From Biol. Abstr. 54(1), 1972.] *WR 147: 34*
[Univ. Helsinki, Helsinki, Finland.]

Kleiman, Devra G. THE COURTSHIP AND COPULATORY BEHAVIOR OF THE GREEN ACOUCHI, *MYOPROCTA PRATTI*. *Z. Tierpsychol.* 29(3): 259-278, illus. 1971. [From Biol. Abstr. 54(5), 1972. In English with German summ.] *WR 147: 34*
[Wellcome Inst. Comp. Physiol., London, England.]

Klimova, Z. I., and E. N. Nel'zina. [MORPHOFUNCTIONAL ORGANIZATION OF BURROW MICROBIOCENOSES OF THE GREAT GERBIL IN NORTHERN KYZYL-KUM: II. SEASONAL ASPECTS IN THE STRUCTURE OF BURROW MICROBIOCENOSES.] *Med. Parasitol. Parasit. Bolezn.* 40(5): 566-571, illus. 1971. [From Biol. Abstr. 54(2), 1972. In Russian with English summ.] *WR 147: 35*
[Rostov Res. Antiplague Inst., Rostov-on-Don, USSR.]

La Voie, G. Keith, Howard P. Tietjen, and Michael W. Fall. ALBINISM IN *THOMOMYS TALPOIDES* FROM COLORADO. *Great Basin Nat.* 31(3): 181. 1971. [From Biol. Abstr. 54(3), 1972.] *WR 147: 35*
[Denver Wildl. Res. Cent., Denver, Colo.]

Lozan, M. N. [RODENTS OF MOLDAVIA / HISTORY, FAUNAL COMPOSITION AND ECOLOGICAL REVIEW OF THE SPECIES. VOL. II.] *Akad. Nauk Moldavskoi SSR, Inst. Zool.* (Kishinev). 186 p., 36 figs. 1971. Price 1 ruble, 2 kopecks. In Russian. *WR 147: 35*

MacMillen, Richard E., Russell V. Baudinette, and Anthony K. Lee. WATER ECONOMY AND ENERGY METABOLISM OF THE SANDY INLAND MOUSE, *LEGGADINA HERMANNSBURGENSIS*. *J. Mammal.* 53(3): 529-539, 6 figs. Aug. 1972. *WR 147: 35*
[Univ. Calif., Irvine.]

Myers, Judith H., and Charles J. Krebs. EMPIRICAL ANALYSIS OF THE ANDRZEJEWSKI AND WIERZBOWSKA MODEL FOR ESTIMATING THE MIGRATORY FRACTION OF SMALL MAMMAL POPULATIONS. *Acta Theriol.* 17(6): 67-74, 3 figs. May 1972. In English with Polish summ. *WR 147: 35*
[Ind. Univ., Bloomington.] Application of the data from live trapping studies of *Microtus* populations to this model indicate that the assumptions made in the model are not always valid.--From abstr.

Mysajev, M. A., and S. G. Ismailov. [CHANGEABLE OOCYST OF *EIMERIA ERYTHOURICA* (MYSAJEV AND ALIJEVA, 1961)--A PARASITE OF THE FAR EASTERN SAND RAT *(MERIONES ERYTHROURUS* GRAY).] *Voprosy Parasitol. Acad. Nauk SSSR.* p. 18-24 + 1 pl. 1969. [From J. Mammal. 53(2, suppl.), 1972. In Russian.] *WR 147: 35*

Nazarova, I. V., and M. V. Tikhvinskaya. [FLEAS OF THE WATER VOLE *ARVICOLA TERRESTRIS* L. IN MIDDLE POVOLZHJE.] *Parazitologiya* 5(5): 413-416. 1971. [From Biol. Abstr. 54(1), 1972. In Russian with English summ.] *WR 147: 35*
[Kazan State Pedagog. Inst., Kazan, USSR.]

Nikolskii, A. A. [THE ACOUSTICAL BEHAVIOUR OF DAY RODENTS OF OPEN REGIONS.] *Vestn. Mosk. Univ. Ser. 6 Biol. Pochvoved.* 25(5): 16-19, illus. 1970. [From Biol. Abstr. 54(5), 1972. In Russian.] *WR 147: 35*
[Moscow State Univ., Moscow, USSR.] Marmot, little marmots, prairie dogs, field mice, and gerbils are grouped ecologically as "day rodents of open regions." The reaction of *Marmota caudata, M. bobac, Citellus relictum, C. pygmaeus,* and *Rhombomys opimus* to various visual stimuli is given. Fear is the primary cause of the acoustical warning of danger.

O'Farrell, Thomas P. ECOLOGICAL DISTRIBUTION OF SAGEBRUSH VOLES, *LAGURUS CURTATUS*, IN SOUTH-CENTRAL WASHINGTON. *J. Mammal.* 53(3): 632-636, 2 figs. Aug. 1972. *WR 147: 35*
[Batelle Memorial Inst., Richland, Wash.]

Ojasti, Juhani, and Gonzalo Medina Padilla. THE MANAGEMENT OF CAPYBARA IN VENEZUELA. *Trans. N. Am. Wildl. Nat. Resour. Conf.* 37: 268-277. 1972. *WR 147: 35*
[Direccion de Recursos Naturales Renovables, Caracas, Venezuela.] *"Hydrochoerus hydrochaeris."*

Pawlik, B., M. Dymon, and E. Slowakiewicz. INVESTIGATIONS ON THE SENSITIVITY OF SMALL WILD MAMMALS TO THE DEVELOPMENT OF INFECTION BY *TOXOPLASMA GONDII*. PART V. DETERMINATION OF THE DEGREE OF SENSITIVITY OF THE FIELD MOUSE *(MICROTUS AGRESTIS L.)* TO THE DEVELOPMENT OF INFECTION BY *TOXOPLASMA GONDII*. *Acta Biol. Cracov. Ser. Zool.* 14(1): 33-39. 1971. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 36*

Petersen, Michael K. FEMALE *PEROMYSCUS PECTORALIS* FOSTERS LITTER OF *REITHRODONTOMYS MEGALOTIS*. *Southwestern Nat.* 17(3): 301-302. 6 Oct. 1972. *WR 147: 36*
[Iowa State Univ., Ames.]

Petrov, O. V., and M. S. Volkova. [ON THE MOULTING OF *MICROTUS SUBTERRANEUS* SEL.-LONG.] *Vestn. Biol. Leningrad Univ.* 15(3): 29-33. 1971. [From J. Mammal. 53(2, suppl.), 1972. In Russian with English summ.] *WR 147: 36*

Pokrovskii, A. V., V. G. Krivosheev, and E. A. Gileva. [EXPERIMENTAL STUDY OF THE ECOLOGY AND DEGREE OF REPRODUCTIVE ISOLATION OF TWO CLOSE FORMS OF NORTHERN VOLES *(MICROTUS MIDDENDORFFI*, POLJAKOV, 1881; *M. HYPERBOREUS*, VINOGRADOV, 1933*).*] *Ekologiya* 1(1): 103-105. 1970. [From Biol. Abstr. 54(5), 1972. In Russian.] *WR 147: 36*
[Inst. Plant Anim. Ecol., Ural Branch, Acad. Sci. USSR, Sverdlovsk, USSR.]

Prahkash, I., A. P. Jain, and K. G. Purohit. A NOTE ON THE BREEDING AND POSTNATAL DEVELOPMENT OF THE INDIAN GERBIL, *TATERA INDICA INDICA* (HARDWICKE, 1807), IN RAJASTHAN DESERT. *Saugetierkd. Mitt.* 19(4): 375-380, illus. 1971. [From Biol. Abstr. 54(2), 1972.] *WR 147: 36*
[Univ. Jodhpur, Jodhpur, Rajasthan, India.]

Price, Roger D., and K. C. Emerson. A NEW SUBGENUS AND THREE NEW SPECIES OF *GEOMYDOECUS* (MALLOPHAGA: TRICHODECTIDAE) FROM *THOMOMYS* (RODENTIA: GEOMYIDAE). *J. Med. Entomol.* 9(5): 463-467, 18 figs. 30 Sept. 1972. *WR 147: 36*
[Univ. Minn., St. Paul.] The new species and their type-hosts are *G. (T.) jamesbeari* from *Thomomys umbrinus supernus*, *G. (T.) genowayi* from *T. u. madrensis*, and *G. (T.) diekermani* from *T. u. toluccae*.--From abstr.

Puzanskii, V. N. [CERTAIN MORPHOLOGICAL AND PHYSIOLOGICAL CHARACTERISTICS OF THE WATER VOLE *ARVICOLA TERRESTRIS* L. IN MOUNTAINOUS DAGESTAN.] *Ekologiya* 1(3): 36-43. 1970. [From Biol. Abstr. 54(5), 1972. In Russian.] *WR 147: 36*

Rahm, U. OEKOLOGIE UND BIOLOGIE VON *TACHYORYCTES RUANDAE* (RODENTIA, RHIZOMYIDAE). [ECOLOGY AND BIOLOGY OF *TACHYORYCTES RUANDAE* (RODENTIA, RHIZOMYIDAE).] *Rev. Suisse Zool.* 78(3): 623-638, illus. 1971. [From Biol. Abstr. 54(5), 1972. In German with English and French summ.] *WR 147: 36*
[Kongo Naturhist. Mus., Basel, Switzerland.]

Raja, K. K. *CORNURUS* SP. FROM THE PERITONEAL CAVITY OF THE GERBIL, *TATERA INDICA* (HARDWICKE) IN MADRAS. *Curr. Sci.* (India) 40(19): 521-523. Oct. 1971. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 36*

Reynierse, J. H. AGONISTIC BEHAVIOUR IN MONGOLIAN GERBILS. *Z. Tierpsychol.* 29(2): 175-179. Sept. 1971. [From J. Mammal. 53(2, suppl.), 1972. In (English) with German summ.] *WR 147: 36*

Roper, R. A. QUADRAT AND BIOTELEMETRIC STUDIES OF THE COTTON RAT. *J. Ala. Acad. Sci.* 40(3): 146. July 1969. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 36*

Sabilaev, A. S. [CONTRIBUTION TO THE ECOLOGY OF THE THREE-TOED JERBOA *(DIPUS SAGITTA)* IN THE NORTHWEST KYZYLKUMY.] *Zool. Zh.* 50(10): 1553-1563, illus. 1971. [From Biol. Abstr. 54(1), 1972. In Russian with English summ.] *WR 147: 36*

Sabilaev, A. S. [ON THE ECOLOGY OF THE JERBOA *ALACTAGULUS ACONTION* PALL. ON THE USTYURT AND IN THE NORTHWESTERN KYSYLKUMS.] *Byull. Mosk. O-va. Ispyt. Prir. Otd. Biol.* 76(4): 16-21. 1971. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 37*

Sabilaev, A. S., and S. G. Borovskii. [ABOVE-GROUND FOOD STORAGES OF THE GREAT GERBIL AND THE PROBABLE CAUSES OF THEIR OCCURRENCE (EXEMPLIFIED AT USTYURT).] *Ekologiya* 1(3): 81-82. 1970. [From Biol. Abstr. 54(4), 1972. In Russian.] *WR 147: 37*
"Rhombomys opimus."

Schmidt, Egon. NEUE FUNDE DER STEPPENBIRKENMAUS, *SICISTA SUBTILIS* (PALLAS, 1773), IN UNGARN. [NEW FINDS OF THE SOUTHERN BIRCH MOUSE, *SICISTA SUBTILIS* (PALLAS, 1773), IN HUNGARY.] *Saeugetierkd. Mitt.* 19(4): 384-388, illus. 1971. [From Biol. Abstr. 54(2), 1972. In German with English summ.] *WR 147: 37*
[Kolto utca 21, Madartani Intez., Budapest, Hungary.]

Sealander, John A. CIRCUM-ANNUAL CHANGES IN AGE, PELAGE CHARACTERISTICS AND ADIPOSE TISSUE IN THE NORTHERN RED-BACKED VOLE IN INTERIOR ALASKA. *Acta Theriol.* 17(1): 1-24, 11 figs. May 1972. In English with Polish summ. *WR 147: 37*
[Univ. Ark., Fayetteville.] *"Clethrionomys rutilus dawsoni."*

Seo, Byong-Seol, and Bon-Yong Koo. [STUDIES ON THE LUNGFLUKE *PARAGONIMUS ILOKTSUENENSIS* CHEN, 1940: I. ON THE OCCURRENCE OF *P. ILOKTSUENENSIS* IN THE NATURAL FINAL HOSTS AT THE NAKDONG AND SUMJIN RIVER DELTAS IN KOREA.] *Seoul J. Med.* 12(1): 31-41, illus. 1971. [From Biol. Abstr. 54(6), 1972. With Korean summ.] *WR 147: 37*
[Coll. Med., Seoul Natl. Univ., Seoul, Korea.] *"Rattus norvegicus, R. rattus, and Apodemus agrarius."*

Sharpilo, L. D. [FINDING OF LARVAE OF *JOYEUXIELLA ROSSICUM* (SKRJABIN, 1923) MATHEVOSSIAN, 1963 (CESTODA, DIPYLIDIIDAE) IN RODENTS IN THE USSR.] *Vestn. Zool.* 5(2): 81-83, illus. 1971. [From Biol. Abstr. 54(6), 1972. In Russian with English summ.] *WR 147: 37*
[Inst. Zool., Acad. Sci. Ukr. SSR, Kiev, USSR.]

Shubin, I. G., and A. Bekenov. [ECOLOGICAL CHARACTERISTICS OF THE TAMARISK GERBIL IN THE ZAISAN BASIN.] *Ekologiya* 2(4): 97-98. 1971. [From Biol. Abstr. 54(6), 1972. In Russian.] *WR 147: 37*
[Inst. Zool., Acad. Sci. Kaz. SSR, Alma-Ata, USSR.] *"Meriones tamaricinus."*

Sickenberg, Otto. UEBER DAS VORKOMMEN DES GOLDHAMSTERS, *MESOCRICETUS AURATUS BRANDTI* (NEHRING, 1898), IN ZENTRALANATOLIEN. [ON THE OCCURRENCE OF THE GOLDEN HAMSTER, *MESOCRICETUS AURATUS BRANDTI* (NEHRING, 1898) IN CENTRAL ANATOLIA.] *Saeugetierkd. Mitt.* 19(4): 362-363. 1971. [From Biol. Abstr. 54(2), 1972. In German.] *WR 147: 37*
[Niedersaech, Landesamt Bodenforsch., Alfred-Bentz-Haus, Hannover-Buchholz, Germany.]

Smirnov, N. N. [FEEDING HABITS OF THE LARGE JAPANESE FIELD MOUSE AND LARGE-TOOTHED REDBACKED AND NORTHERN REDBACKED VOLES IN THE FORESTS OF CENTRAL SIKHOTE-ALIN'.] *Ekologiya* 1(6): 106-107. 1970. [From Biol. Abstr. 54(6), 1972. In Russian.] *WR 147: 37*
The principal food of the large Japanese field mouse *(Apodemus speciosus)* in the forests of Central Sikhote-Alin' is seeds, primarily pine nuts; of the large-toothed redbacked vole *(Clethrionomys rufocanus)*, the green parts of grasses; and of the northern redbacked vole *(C. rutilis)*, mosses and lichens.

Smirnov, V. S., T. A. Pavlenko, and A. V. Pokrovskii. [METHOD OF ANALYZING THE AGE STRUCTURE OF A POPULATION OF THE SMALL FIVE-TOED JERBOA.] *Ekologiya* 2 (4): 88-90, illus. 1971. [From Biol. Abstr. 54(6), 1972. In Russian.] *WR 147: 37*
[Inst. Plant Anim. Ecol., Ural Sci. Cent., Acad. Sci. USSR, Sverdlovsk, USSR.] *"Allactaga elater."*

Sokur, I. [STUDY OF POPULATIONS OF HARMFUL RODENTS IN THE AGROBIOCENOSES OF THE UKRAINE.] *Vestn. Zool.* 4: 3-10. 1971. [From J. Mammal. 53(2, suppl.), 1972. In Russian with English summ.] *WR 147: 38*

Thiessen, D. D., G. Lidzey, and J. Nyby. THE EFFECTS OF OLFACTORY DEPRIVATION AND HORMONES ON TERRITORIAL MARKING IN THE MALE MONGOLIAN GERBIL *(MERIONES UNGUICULATUS). Horm. Behav.* 1(4): 315-325. Nov. 1970. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 38*

Tibbitts, Stephen T., and Joseph Jennings. DEER MICE PREFERENCES FOR COMBINATIONS OF FOOD, NEST MATERIAL, AND LIGHT. *J. Mammal.* 53(3): 628-629. Aug. 1972. *WR 147: 38*
[Univ. Mont., Missoula.] *"Peromyscus maniculatus artemisiae."*

Wood, D. H. THE ECOLOGY OF *RATTUS FUSCIPES* AND *MELOMYS CERVINIPES* (RODENTIA: MURIDAE) IN A SOUTH-EAST QUEENSLAND RAIN FOREST. *Australian J. Zool.* 19(4): 371-392. 1971. [From Biol. Abstr. 54(5), 1972.] *WR 147: 38*
[Div. Wildl. Res., CSIRO, Lyneham, Australia.]

Yalden, D. W. A POPULATION OF THE YELLOW-NECKED MOUSE, *APODEMUS FLAVICOLLIS. J. Zool.* 164(2): 244-250. June 1971. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 38*

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Andrews, R. V., R. W. Belknap, J. Southard, M. Lorincz, and S. Hess. PHYSIOLOGICAL, DEMOGRAPHIC AND PATHOLOGICAL CHANGES IN WILD NORWAY RAT *(RATTUS NORVEGICUS)* POPULATIONS OVER AN ANNUAL CYCLE. *Comp. Biochem. Physiol. A Comp. Physiol.* 41(1): 149-165, illus. 1972. [From Biol. Abstr. 54(3), 1972.] *WR 147: 38*
[Creighton Univ., Omaha, Nebr.]

Brooks, J. E. BEHAVIOR OF THE NORWAY RAT AND ITS SIGNIFICANCE IN CONTROL PROGRAMS. *Tech. Release Natl. Pest Control Assoc.* no. 22-69: 1-12. Dec. 1969. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 38*

Fleming, C. A. RATS AND MOA EXTINCTION. *Notornis* 16: 210-211. 1969. [From Bird-Banding 42(4), 1971.] *WR 147: 38*

Gwynn, G. Wayne. FIELD TRIAL OF A CHEMOSTERILANT IN WILD NORWAY RATS. *J. Wildl. Manage.* 36(3): 823-828, 2 figs. July 1972. *WR 147: 38*
[Univ. Mich., Ann Arbor.] Abstract: The female antifertility drug (1-[2-[p-[α(*p*-methoxyphenyl)-β-nitrostyryl] phenoxy [ethyl] pyrrolidine monocitrate, a substituted stilbene derivative with the code name CN-55,945-27, was field-tested as a population control agent in wild Norway rats *(Rattus norvegicus).* A manufacturing plant for livestock feed and its adjacent dumping area were treated with the drug in a water supply from May 7 through September 17. Pretreatment trapping (500 trap nights) yielded 19 and 11 rats at the treated and control plants, respectively. Posttreatment trapping (500 trap nights) yielded 19 rats at the treated plant and 45 at the control plant. Of the rats trapped after treatment, only one from the treated plant was judged to be a recruit; 30 were judged to be recruits at the control plant. Of nine adult females in the sample trapped after treatment, none was pregnant or lactating; six of nine adult females trapped at the control plant were either pregnant or lactating. There was also a significant decrease in the number of placental scars found in post-treatment females relative to the animals at the control plant.

Ikeda, Y., T. Ijima, E. Motoi, and Y. Noboru. [PRELIMINARY REPORT ON RAT CONTROL ON AMAMI OSHIMA ISLAND.] *Snake* (Hittagun) 3(1): 60-62. Aug. 1971. [From J. Mammal. 53(2, suppl.), 1972. In Japanese with English summ.] *WR 147: 38*

Lavoie, G. Keith, F. Nelson Swink, and Jesus P. Sumangil. DESTRUCTION OF RICE TILLERS BY RATS IN RELATION TO STAGES OF RICE DEVELOPMENT IN LUZON. *Philippine Agric.* 54(3/4): 175-181, illus. 1970. [From Biol. Abstr. 54(5), 1972.] *WR 147: 39*
[Univ. Philippines, Laguna, Philippines.]

Romanova, G. A. [ECOLOGY OF THE HOUSE MOUSE AT THE NORTHEASTERN LIMIT OF ITS RANGE.] *Ekologiya* 1(1): 98-99. 1971. [From Biol. Abstr. 54(5), 1972. In Russian.] *WR 147: 39*
[Yakutsk State Univ., Yakutsk, USSR.]

Smirnov, P. K., and K. V. Shung. [SEASONAL VARIATION OF OXYGEN CONSUMPTION BY *NESOKIA INDICA* GRAY AND *RATTUS NORVEGICUS* BERK.] *Vestn. Zool.* 4: 26-30. 1971. [From J. Mammal. 53(2, suppl.), 1972. In Russian with English summ.] *WR 147: 39*

Solomonov, N. G., G. A. Romanova, and M. A. Alekseeva. [ECOLOGICAL AND PHYSIOLOGICAL CHARACTERISTICS OF THE HOUSE MOUSE INHABITING CENTRAL YAKUTIA.] *Ekologiya* 2(4): 94-97, illus. 1971. [From Biol. Abstr. 54(6), 1972. In Russian.] *WR 147: 39*
[Yakutsk State Univ., Yakutsk, USSR.]

Tamarin, Robert H., and Spencer R. Malecha. REPRODUCTIVE PARAMETERS IN *RATTUS RATTUS* AND *RATTUS EXULANS* OF HAWAII, 1968 TO 1970. *J. Mammal.* 53(3): 513-528, 2 figs. Aug. 1972. *WR 147: 39*
[Boston Univ., Boston, Mass.] Abstract: Reproductive parameters were assessed in populations of the roof rat *(Rattus rattus)* and the Polynesian rat *(Rattus exulans)* in Hawaii for one year as a step in understanding population regulation in these species. Populations of the roof rat undergo a yearly cycle in which density is highest and reproduction is lowest in the winter. During the second winter of this study, numbers did not return to previous high levels, yet reproductive activity was curtailed. This suggests that reproductive activity is controlled mainly by environmental factors rather than those that are density dependent. Density of the Polynesian rat was generally low in each study population. Populations of both species generally had low productivity in comparison to those in other geographical areas. This low productivity is brought about by altered life history components: delayed maturation, fewer litters per female, and fewer young per litter. This study is part of an effort to gather reproductive, demographic, and genetic data with the goal of elucidating the mechanisms of population regulation and the relationship of natural selection to population processes in these species.

Telle, H.-J. KONTROLLE UND BEWERTUNGSMOEGLICHKEITEN GROSSRAUMIGER BEKAEMPFUNGSAKTIONEN GEGEN WANDERRATTEN *(RATTUS NORVEGICUS).* [FORMULATION AND EVALUATION OF CONTROL PROGRAMS OF BROWN RATS *(RATTUS NORVEGICUS).*] *Z. Angew. Zool.* 58(2): 141-167, illus. 1971. [From Biol. Abstr. 54(2), 1972. In German with English summ.] *WR 147: 39*

Whitney, G., M. D. Stockton, and E. F. Tilson. POSSIBLE SOCIAL FUNCTION OF ULTRA-SOUNDS PRODUCED BY ADULT MICE *(MUS MUSCULUS).* *Bull. Ecol. Soc. Am.* 52(4): 49. Dec. 1971. [From J. Mammal. 53(2, suppl.), 1972. Abstract only.] *WR 147: 39*

Wood, B. J. INVESTIGATIONS OF RATS IN RICE-FIELDS DEMONSTRATING AN EFFECTIVE CONTROL METHOD GIVING SUBSTANTIAL YIELD INCREASE. *Pans* (London) 17(2): 180-193. June 1971. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 39*

Wood, B. J. SOURCES OF REINFESTATION OF OIL PALMS BY THE WOOD RAT *(RATTUS TIOMANICUS).* WOOD CROP PRODUCTION IN MALAYSIA, 1970. *Incorporates Soc. Planters* (Kuala Lumpur). p. 146-165. 1971. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 39*

Barnes, Allan M., Louis J. Ogden, and Eduardo G. Campos. CONTROL OF THE PLAGUE VECTOR, *OPISOCROSTIS HIRSUTUS*, BY TREATMENT OF PRAIRIE DOG *(CYNOMYS LUDOVICIANUS)* BURROWS WITH 2% CARBARYL DUST. *J. Med. Entomol.* 9(4): 330-333. 1 Aug. 1972. *WR 147: 40*

[Cent. Dis. Control, P.O. Box 551, Fort Collins, Colo.] Treatment of prairie dog *(Cynomys ludovicianus)* burrows with 2% carbaryl (Sevin) dust at a rate of 85-95 g per burrow resulted in 100% elimination of the plague vector, *Opisocrostis hirsutus*, within 24 hr.—From abstr.

Barry, William J. METHOXYFLURANE: AN ANESTHETIC FOR FIELD AND LABORATORY USE ON SQUIRRELS. *J. Wildl. Manage.* 36(3): 992-993. July 1972. *WR 147: 40*

[Mich. State Univ., East Lansing.] Abstract: The inhalant methoxyflurane effectively anesthetizes gray squirrels *(Sciurus carolinensis)* and fox squirrels *(S. niger)*. When administered to a restrained animal, it has a broad range of safe levels and is fast acting. Recovery is rapid and without harmful after-effects.

Beskrovnyi, M. A. [EXPERIMENTAL STUDY OF CONDITIONS NECESSARY FOR THE REPRODUCTION OF THE HIMALAYAN MARMOT IN CAPTIVITY.] *Ekologiya* 1(3): 83-85. 1970. [From Biol. Abstr. 54(4), 1972. In Russian.] *WR 147: 40*

[Rostov-on-Don Pedagog. Inst., Rostov-on-Don, USSR.] *"Marmota bobak."*

Brenner, F. J., and S. Mauser. VOCALIZATION AND SOCIAL INTERACTIONS OF CAPTIVE EASTERN CHIPMUNKS. *Bull. Ecol. Soc. Am.* 52(4): 49. Dec. 1971. [From J. Mammal. 53(2, suppl.), 1972. Abstract only.] *WR 147: 40*

Clark, Tim W. NOTES ON WHITE-TAILED PRAIRIE DOG *(CYNOMYS LEUCURUS)* BURROWS. *Great Basin Nat.* 31(3): 115-124. 1971. [From Biol. Abstr. 54(3), 1972.] *WR 147: 40*

[Univ. Wyo., Laramie.]

Dobroruka, Ludek J. SCENT MARKING AND COURTSHIP IN SIBERIAN CHIPMUNK, *TAMIAS SIBIRICUS LINEATUS* (SIEBOLD, 1824), WITH NOTES ON THE TAXONOMIC RELATIONS OF CHIPMUNKS (MAMMALIA). *Vestn. Cesk. Spol. Zool.* 36(1): 12-16, illus. 1972. [From Biol. Abstr. 54(5), 1972.] *WR 147: 40*

[Prague Zool. Garden, Troja 120, Prague, Czechoslovakia.] Abstract: Scent marking and courtship in *T. sibiricus lineatus* are described and compared with equivalent behavior in other Sciuridae. It closely resembles that of tree squirrels and therefore the taxonomic relationships of chipmunks are discussed.

Haberman, Clark G., and Eugene D. Fleharty. NATURAL HISTORY NOTES ON FRANKLIN'S GROUND SQUIRREL IN BOONE COUNTY, NEBRASKA. *Trans. Kans. Acad. Sci.* 74(1): 76-80. 7 Jan. 1972. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 40*

Halvorson, Curtis H. DEVICE AND TECHNIQUE FOR HANDLING RED SQUIRRELS. *U.S. Fish Wildl. Serv. Spec. Sci. Rep. Wildl.* no. 159. ii + 10 p., 7 figs. 1972. *WR 147: 40*

[Denver Wildl. Res. Cent., Denver, Colo.] Abstract: Rapid, efficient weighing, examination, and marking of red squirrels *(Tamiasciurus hudsonicus)* resulted from use of a semiflexible wire-rod handling cone and a cloth weighing bag with a plastic window. The bag attaches to a trap entrance for transfer. Weighing and some examination can be done with the bag alone; for extensive examination and marking, the animal is transferred to the handling cone, which holds it exposed and immobile, freeing one or both hands of the operator. The cone is designed for animals of 80 to 300 grams but has been used for animals of 50 to 600 grams; larger or smaller cones could be constructed. The cone and weighing bag are light, compact, durable, and harmless to the animal. Construction details are given.

Hart, R. B. FOOD PREFERENCES OF THE CLIFF CHIPMUNK, *EUTAMIAS DORSALIS*, IN NORTHERN UTAH. *Great Basin Nat.* 31(3): 115-124. 1971. [From Biol. Abstr. 54 (3), 1972.] *WR 147: 40*

[Utah State Univ., Logan.]

Kavanau, J. Lee, and Carl E. Rischer. OPTIMUM ILLUMINATION FOR GROUND SQUIRREL *(AMMOSPERMOPHILUS LEUCURUS)* ACTIVITY. *Oecologia* (Berlin) 8(4): 391-399. 1972. [From Biol. Abstr. 54(6), 1972.] *WR 147: 41*
[Univ. Calif., Los Angeles.]

Kerwin, Larry. POPULATION SIZE AND PRODUCTIVITY OF THE BLACK-TAILED PRAIRIE DOG IN SASKATCHEWAN. *Blue Jay* 30(2): 107-109. June 1972. *WR 147: 41*
[905 McKinnon Drive, Calgary, Alberta, Canada.] Since the black-tailed prairie dog is considered to be an endangered Canadian mammal, it is important that a more intensive study be carried out on the status and ecology of this species. It would appear from our results that there are even fewer prairie dogs existing in Canada than was previously supposed.

Kramm, Kenneth R. BODY TEMPERATURE REGULATION AND TORPOR IN THE ANTELOPE GROUND SQUIRREL, *AMMOSPERMOPHILUS LEUCURUS*. *J. Mammal.* 53(3): 609-611, 1 fig. Aug. 1972. *WR 147: 41*
[Mich. Technol. Univ., Houghton.]

Levin, Ephraim Y., and Vagn Flyger. UROPORPHYRINOGEN III COSYNTHETASE ACTIVITY IN THE FOX SQUIRREL *(SCIURUS NIGER)*. *Science* 174(4004): 59-60, 1 fig. 1 Oct. 1971. *WR 147: 41*
[Johns Hopkins Univ. School Med., Baltimore, Md.] Abstract. The activity of uroporphyrinogen III cosynthetase in hemolysates and tissue extracts from fox squirrels is much less than in similar preparations from gray squirrels. Low activity of this enzyme explains the production of large amounts of uroporphyrin I by the fox squirrel. Members of this species thus provide a small-animal model for studies of congenital erythropoietic porphyria, a hereditary disease of man and cattle which is associated with a similar partial deficiency of uroporphyrinogen III cosynthetase.

Long, Charles A. A NEW SUBSPECIES OF CHIPMUNK FROM THE DOOR PENINSULA, WISCONSIN (MAMMALIA: RODENTIA). *Proc. Biol. Soc. Washington* 84(24): 201-202. 1971. [From Biol. Abstr. 54(2), 1972.] *WR 147: 41*
[Wis. State Univ., Stevens Point.] *"Tamias striatus doorsiensis."*

McMillan, James H., and Dallas A. Sutton. ADDITIONAL INFORMATION ON CHROMOSOMES OF *APLODONTIA RUFA* (SCIURIDAE). *Southwestern Nat.* 17(3): 307-308, 2 figs. 6 Oct. 1972. *WR 147: 41*
[Chico State Coll., Chico, Calif.]

Nebrasov, E. S. [DENSITY DISTRIBUTION OF THE RED-CHEEKED SOUSLIK AT THE NORTHERN LIMITS OF ITS RANGE.] *Ekologiya* 1(1): 103. 1970. [From Biol. Abstr. 54(5), 1972. In Russian.] *WR 147: 41*
[A. M. Gorkii Ural State Univ., Sverdlovsk, USSR.] *"Citellus major."*

Pantuwatana, Somsak, Wayne H. Thompson, Douglas M. Watts, and Robert P. Hanson. EXPERIMENTAL INFECTION OF CHIPMUNKS AND SQUIRRELS WITH LA CROSSE AND TRIVITTATUS VIRUSES AND BIOLOGICAL TRANSMISSION OF LA CROSSE VIRUS BY *AEDES TRISERIATUS*. *Am. J. Trop. Med. Hyg.* 21(4): 476-481. 1972. *WR 147: 41*
[Univ. Wis., Madison.]

Pizzimenti, John J., and Charles F. Hadler. CHROMOSOMES AND SERUM PROTEINS OF THE UTAH PRAIRIE DOG, *CYNOMYS PARVIDENS* (SCIURIDAE). *Southwestern Nat.* 17 (3): 279-286, 1 fig. 6 Oct. 1972. *WR 147: 41*
[Univ. Kans., Lawrence.]

Reilly, Raymond E. PSEUDO-COPULATORY BEHAVIOR IN *EUTAMIAS MINIMUS* IN AN ENCLOSURE. *Am. Midl. Nat.* 88(1): 232. July 1972. *WR 147: 41*
[Lake Superior State Coll., Sault Ste. Marie, Mich.] Abstract: When an adult, breeding male *Eutamias minimus* was introduced into an enclosure occupied by a resident sexually active male a hierarchical system developed with the resident male clearly dominant.

SCIURIDS--Continued

Rouk, U. [A SQUIRREL IN A NESTING BOX.] *Eesti Loodus* 10: 613. 1971. [From J. Mammal. 53(2, suppl.), 1972. In Estonian.] *WR 147: 42*

Steiner, A. C. MORTALITY RESULTING FROM INTRASPECIFIC FIGHTING IN SOME GROUND SQUIRREL POPULATIONS. *J. Mammal.* 53(3): 601-603, 1 fig. Aug. 1972. *WR 147: 42*
[Univ. Alberta, Edmonton, Alberta, Canada.] *"Spermophilus columbianus and S. undulatus."*

Whitaker, John O., Jr. FOOD AND EXTERNAL PARASITES OF *SPERMOPHILUS TRIDECEMLINEATUS* IN VIGO COUNTY, INDIANA. *J. Mammal.* 53(3): 644-648. Aug. 1972. *WR 147: 42*
[Ind. State Univ., Terre Haute.]

BEAVER

Kienzler, James M. WOODY PLANT UTILIZATION BY BEAVER IN NATURALLY ACID AND ACID MINE WATER. *M.S. thesis, W. Va. Univ.* 87 p. 1971. *WR 147: 42*
Woody plant preferences and importance in addition to water quality was studied on two areas near Morgantown, W. Va. Poor water quality on one site did not affect the beaver. Various factors are discussed. These include: species cut, diameter of species cut, diameter of species available, seasonal preference, proximity to water, preference for conifers, and the relationship of each of these factors to utilization.--Courtesy/ David E. Samuel.

MUSKRAT & NUTRIA

Mallach, Norbert. MARKIERUNGSVERSUCHE ZUR ANALYSE DES AKTIONSRAUMS UND DER ORTSBEWEGUNGEN DES BISAMS *(ONDATRA ZIBETHICA L.)*. [ATTEMPTS AT MARKING FOR THE ANALYSIS OF THE AREA OF ACTIVITY AND MOVEMENTS OF THE MUSKRAT *(ONDATRA ZIBETHICA L.)*.] *Ans. Schaedlingskd. Pflanzenschutz* 44(9): 129-136, illus. 1971. [From Biol. Abstr. 54(2), 1972. In German with French summ.] *WR 147: 42*
[Iffeldorter St. 9, Munich, Germany.]

FUR ANIMALS, GENERAL

Brochu, M. A PRELIMINARY STUDY OF THE ESTABLISHMENT OF EQUALIZATION PRICES FOR THE PELTS OF FUR-BEARING ANIMALS IN NEW-QUEBEC. *Musk-ox* (Saskatoon) 9: 42-52. 1971. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 42*

BEARS

Eberts, A. GRIZZLIES. *Victorian Nat.* 28(4): 41-42. Dec. 1971. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 42*

Macpherson, A. H. REPORT OF THE ADMINISTRATIVE COMMITTEE FOR POLAR BEAR RESEARCH AND MANAGEMENT. *Trans. Fed.-Prov. Wildl. Conf.* 1971 (Toronto) 35: 17-18. 1972. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 42*

McIlroy, Carl W. EFFECTS OF HUNTING ON BLACK BEARS IN PRINCE WILLIAM SOUND. *J. Wildl. Manage.* 36(3): 828-837, 1 fig. July 1972. *WR 147: 42*
[Alaska Dep. Fish & Game, Fairbanks.] Abstract: Within recent years, hunting of black bears *(Ursus americanus)* has extended from areas near Valdez, Alaska, into previously unhunted regions in Prince William Sound. The success of unguided hunters has declined markedly since 1966, with greater numbers of hunters going on guided hunts and relatively more bears being killed at greater distances from Valdez. The length of time an area was hunted was found to be inversely correlated with the mean age of bears removed and the apparent abundance of bears

BEARS—Continued

remaining. The sample of the black bear population that was harvested by hunters was biased towards older male bears. However, relative comparisons of harvest data by time and space are valid. Although net population recruitment has not kept pace with removal of bears in heavily hunted areas, bear hunting has been productive only in certain areas and at specific times. There appears to be a density level of black bears below which further hunting with the techniques employed is unproductive.

Schaffer, Stephen C. SOME ECOLOGICAL RELATIONSHIPS OF GRIZZLY BEARS AND BLACK BEARS OF THE APGAR MOUNTAINS IN GLACIER NATIONAL PARK, MONTANA. *M.S. thesis, Univ. Mont.* 134 p. 1971. *WR 147: 43*

RACCOON, RINGTAIL, COATI

Schmidt, John L. RACCOONS AND THEIR CONTROL. *Coop. Ext. Serv. S. Dak. State Univ., U.S. Dep. Agric.* FS 536. 6 p., illus. Aug. 1971. *WR 147: 43*
"Procyon lotor."

Sonenshine, Daniel E., and Elton L. Winslow. CONTRASTS IN DISTRIBUTION OF RACCOONS IN TWO VIRGINIA LOCALITIES. *J. Wildl. Manage.* 36(3): 838-847, 4 figs. July 1972. *WR 147: 43*
[Old Dominion Univ., Norfolk, Va.]

Trapp, Gene R. SOME ANATOMICAL AND BEHAVIORAL ADAPTATIONS OF RINGTAILS, *BASSARISCUS ASTUTUS*. *J. Mammal.* 53(3): 549-557, 3 figs. Aug. 1972. *WR 147: 43*
[Calif. State Univ., Sacramento.] Abstract: Rotation of the hind foot and associated climbing techniques, plus other adaptations associated with climbing rocks and trees by ringtails *(Bassariscus astutus)*, were studied in captivity and under natural and seminatural conditions in Zion National Park, Utah. The ringtail hind foot can rotate externally at least 180 degrees, permitting rapid head-first descent of rocks, cliffs, trees, narrow slab edges, and thin branches, sometimes without the use of claws. Examination of X-rays and articular facets show that rotation occurs at the hip-femur, calcaneum-talus, and intratarsal joints. Other adaptive behavior includes "chimney stemming" between vertical walls, "ricocheting" off vertical surfaces, accurate "power leaping," techniques to reverse direction on narrow ledges, and claustrophilia.

MUSTELIDS

Ben'kovskii, L. M. [*MUSTELA ERMINEA* ON SAKHALIN ISLAND.] *Zool. Zh.* 50(8): 1264-1266. 1971. [From Biol. Abstr. 54(1), 1972. In Russian with English summ.] *WR 147: 43*
Materials are provided on the ecology of *M. erminea* on Sakhalin Island. Rodents and spawning salmons predominate in its food. The distribution of *Mustela* over the island is given. It is most numerous in the middle part of Sakhalin, between 51 and 49° N latitude. Its numbers sharply fall both to the north and south and inhabits river valleys, old overgrowing slash fires and felling areas and avoids bamboo-fields.

Drabble, P. THE FUNCTION OF MUTUAL GROOMING IN BADGERS *(MELES MELES)*. *J. Zool.* 64(2): 260. June 1971. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 43*

Fog, Mette. STUDIES ON THE WEASEL *(MUSTELA NIVALIS)* AND THE STOAT *(MUSTELA ERMINEA)* IN DENMARK. *Danish Rev. Game Biol.* 6(2): 3-14, illus. 1969. [From Biol. Abstr. 54(4), 1972. In English with Danish and Russian summ.] *WR 147: 43*
[Vildtbiol. Sta., Kalø, Rønde, Denmark.]

MUSTELIDS—Continued

Genoways, Hugh H., and J. Knox Jones, Jr. NOTES ON SPOTTED SKUNKS (GENUS *SPILOGALE*) FROM WESTERN MEXICO. *An. Inst. Biol. Univ. Nac. Auton. Mex. Ser. Zool.* 39(1): 123-132, illus. 1968. [From Biol. Abstr. 54(4), 1972. In English with Spanish summ.] *WR 147: 44*
[Mus. Nat. Hist., Univ. Kans., Lawrence.]

Henderson, F. Robert, Paul F. Springer, and Richard Adrian. THE BLACK-FOOTED FERRET IN SOUTH DAKOTA. *S. Dak. Dep. Game, Fish, Parks.* 37 p., 30 figs. 1968. *WR 147: 44*
[Kans. State Univ., Manhattan.] The black-footed ferret *(Mustela nigripes)* is described physically and by habitat, distribution, and status. An over-all program to preserve the ferret is presented.

Kenyon, Karl W. THE SEA OTTER IN THE EASTERN PACIFIC OCEAN. *North Am. Fauna* no. 68. xiii + 352 p., 123 figs. 1969. *WR 147: 44*
[Bur. Sport Fisheries & Wildl. Naval Support Activity, Bldg. 192, Seattle, Wash.] Copies of this publication are available from the author. Major topics of discussion: Systematics, Physical characteristics, Habitat requirements, General behavior, Food and feeding behavior, Distribution and numbers, Reproduction, Limiting factors, Captivity, and Management.

Lazar, J. W., and G. Beckhorn. MOTHER-YOUNG RELATIONSHIPS IN THE FERRET. *Bull. Ecol. Soc. Am.* 52(4): 24. Dec. 1971. [From J. Mammal. 52(2, suppl.), 1972. Abstract only.] *WR 147: 44*

Otis, R. E., C. D. Andrina, and H. J. Clemens. EXPLORATORY BEHAVIOR IN MINK *(MUSTELA VISON)* AND FERRETS *(M. PUTORIOUS)*. *Bull. Ecol. Soc. Am.* 52(4): 42. Dec. 1971. [From J. Mammal. 53(2, suppl.), 1972. Abstract only.] *WR 147: 44*

Ramirez-Pulido, Jose, and Allan R. Phillips. PRIMER REGISTRO DE COMADREJA *(MUSTELA)* EN QUINTANA ROO, MEXICO. [FIRST RECORD OF THE WEASEL *(MUSTELA)* IN QUINTANA ROO, MEXICO.] *An. Inst. Biol. Univ. Nac. Auton. Mex. Ser. Zool.* 39(1): 145-148. 1968. [From Biol. Abstr. 54(4), 1972. In English with Spanish summ.] *WR 147: 44*
[Univ. Nac. Auton. Mex., Mexico City, Mexico.]

DOGS, WOLVES, FOXES

Clark, Kim Robert Ferris. FOOD HABITS AND BEHAVIOUR OF THE TUNDRA WOLF ON CENTRAL BAFFIN ISLAND. *Ph.D. thesis, Univ. Toronto.* 1971. [From Diss. Abstr. Int. B Sci. Eng. 33(3), 1972. To obtain a microfilm copy please order directly from the National Library of Canada at Ottawa.] *WR 147: 44*
A study of the ecology of the Baffin Island tundra wolf *(Canis lupus manningi)* was conducted in an 1800 square mile (4660 sq km) area on central Baffin Island in spring and summer, 1966-1969, in order to further the understanding of the relationships between unexploited populations of this predator and its single large prey species, the caribou *(Rangifer tarandus groenlandicus)*.—From abstr.

Fox, M. W. THE SOCIAL SIGNIFICANCE OF GENITAL LICKING IN THE WOLF, *CANIS LUPUS*. *J. Mammal.* 53(3): 637-640, 2 figs. Aug. 1972. *WR 147: 44*
[Washington Univ., St. Louis, Mo.]

Klenk, Karl. DAS AKTIVITAETSMUSTER DES ROTFUCHSES, *VULPES VULPES* (L.), IN EINEM FREILANDGEHEGE MIT KUENSTLICHEM BAU. [THE ACTIVITY OF THE RED FOX *(VULPES VULPES* L.) IN AN ENCLOSURE WITH AN ARTIFICIAL DEN.] *Z. Saeugetierkd.* 36(5): 257-259, illus. 1971. [From Biol. Abstr. 54(4), 1972. In German with English summ.] *WR 147: 44*
[Univ. Zurich, Zurich, Switzerland.] The activity of 1-6 red foxes in and out of an artificial den was examined by means of 2-day-observations in an enclosure.

Kruckenberg, Larry. THE RED FOX AND COYOTE IN NORTH DAKOTA. PART III--THE COYOTE. *N. Dak. Outdoors* 35(3): 6-9, illus. Sept. 1972. *WR 147: 45*
Discussion of *Canis latrans* including a general description, history and distribution, habitat, life history, food habits, economic importance, and management.

Kruckenberg, Larry. THE RED FOX AND COYOTE IN NORTH DAKOTA. PART IV--THE COYOTE. *N. Dak. Outdoors* 35(4): 10-13, illus. Oct. 1972. Reprints of the series will be available from the North Dakota Game and Fish Department, Bismarck. *WR 147: 45*
Harvest of the coyote discussed. Methods described include tracking, spotting, drives, hounds and aircraft, calling and trapping.

Lombaard, L. J. AGE DETERMINATION AND GROWTH CURVES IN THE BLACK-BACKED JACKAL, *CANIS MESOMELAS* SCHREBER, 1775 (CARNIVORA: CANIDAE). *Ann. Transvaal Mus.* 27(7): 135-169, illus. 1971. [From Biol. Abstr. 54(6), 1972.] *WR 147: 45*
[Transvaal Mus., Pretoria, South Africa.]

Morrell, Stephen. LIFE HISTORY OF THE SAN JOAQUIN KIT FOX. *Calif. Fish Game* 58(3): 162-174, 3 figs. July 1972. *WR 147: 45*
A life history study of the San Joaquin kit fox, *Vulpes macrotis mutica*, was conducted from April, 1970 through June, 1971. The main study area was located near Taft, California, on the west side of the San Joaquin Valley. Twenty-eight kit foxes were trapped; 14 were tagged with small radio transmitters. Radio tagged kit foxes were located in different dens.--From abstr.

Scudday, James F. TWO RECENT RECORDS OF GRAY WOLVES IN WEST TEXAS. *J. Mammal.* 53(3): 598. Aug. 1972. *WR 147: 45*
[Sul Ross State Univ., Alpine, Tex.] *"Canis lupus."*

Shilyaeva, L. M. [STRUCTURE OF THE ARCTIC FOX *(ALOPEX LAGOPUS)* POPULATION AND ROLE OF DIFFERENT GENERATIONS IN THE CONTROL OF ITS POPULATION DENSITY.] *Zool. Zh.* 50(12): 1843-1852, illus. 1971. [From Biol. Abstr. 54(3), 1972. In Russian with English summ.] *WR 147: 45*

Speller, Stanley Wayne. FOOD ECOLOGY AND HUNTING BEHAVIOUR OF DENNING ARCTIC FOXES AT ABERDEEN LAKE, NORTHWEST TERRITORIES. *Ph.D. thesis, Univ. Saskatchewan.* 159 p. 1972. [From Diss. Abstr. Int. B Sci. Eng. 33(3), 1972.] *WR 147: 45*
Study of breeding arctic foxes *(Alopex lagopus)* and their major prey, the brown lemming *(Lemmus trimucronatus)* and the Greenland-collared lemming *(Dicrostonyx groenlandicus)*, conducted at Aberdeen Lake, District of Keewatin, N.W.T., in the summers of 1968, 1969, and 1970.

Stewart, Nora M. COYOTE MANAGEMENT IN SASKATCHEWAN: IS POISON THE ANSWER? *Blue Jay* 30(3): 138-145. Sept. 1972. *WR 147: 45*
The use of 1080, sodium monofluoroacetate, in Saskatchewan is described and its ecological implications are discussed.

Wortmann, Waltraud. METRISCHE UNTERSUCHUNGEN AN SCHAEDELN VON COYOTEN, WOELFEN UND HUNDEN. [METRIC STUDIES ON SKULLS OF COYOTES, WOLVES AND DOGS.] *Zool. Anz.* 185(5/6): 435-464, illus. 1971. [From Biol. Abstr. 54(1), 1972. In German.] *WR 147: 45*
[Neue Univ., Inst. Haustierkd., Olshausenst. 40-60, Kiel, Germany.]

CATS

Berrie, Peter M. SEX DIFFERENCES IN RESPONSE TO PHENCYCLIDINE HYDROCHLORIDE IN LYNX. *J. Wildl. Manage.* 36(3): 994-996, 1 fig. July 1972. *WR 147: 45*
[Inst. Study & Conserv. Endangered Species, Athens, Ga.] Abstract: Thirty-two Canada lynx *(Lynx canadensis)* were immobilized with phencyclidine hydrochloride (Sernylan) near Central, Alaska (14 females 19 times and 8 males 13

times). A regression analysis of *time off feet* in hours versus mg of drug per kg of lynx revealed correlations within a sex (0.92 males, 0.86 females) and a 98 percent confidence that the observed differences between the sexes were not due to chance, as indicated by the Student's *t*-test. No discernible differences were noted between lynxes immobilized once and those immobilized more than once.

Coman, Brian J., and Hans Brunner. FOOD HABITS OF THE FERAL HOUSE CAT IN VICTORIA. *J. Wildl. Manage.* 36(3): 848-853, 1 fig. July 1972. *WR 147: 46*
[Dep. Crown Lands & Surv., Frankston, Victoria, Australia.]

Kazlauskas, J., and A. Matuzevičius. [ON THE HELMINTHIC FAUNA OF THE LYNX *FELIS LYNX* IN LITHUANA.] *Acta Parasitol. Lituanica* 10: 113-115. 1970. In Russian with Lithuanian and English summ. *WR 147: 46*

BIG GAME, GENERAL

Bannikov, A. G., and L. V. Zhirnov. [SECONDARY BIOLOGIC PRODUCTIVITY OF SEMI-DESERTS IN THE WESTERN PRE-CASPIAN AREA.] *Ekologiya* 1(2): 33-37, illus. 1970. [From Biol. Abstr. 54(2), 1972. In Russian.] *WR 147: 46*
In 1957, the study was made of changes in the biomass of giraffes inhabiting the shores of Volga river.

Bergerud, Arthur T. FOOD HABITS OF NEWFOUNDLAND CARIBOU. *J. Wildl. Manage.* 36(3): 913-923, 1 fig. July 1972. *WR 147: 46*
[Univ. Victoria, Victoria, British Columbia, Canada.] Abstract: The food habits of caribou *(Rangifer tarandus)* in Newfoundland were studied by an examination of the contents of rumina. Important groups of plants in the diet in the spring were broadleaved evergreen and deciduous shrubs and sedges; in the summer, deciduous shrubs, reindeer lichens *(Cladonia* spp.*)*, and fungi; in the autumn, reindeer lichens; and in the winter, arboreal lichens and evergreen shrubs. It was concluded that caribou do not have specialized food habits; when necessary they can use most plants. However, the caribou preferred fungi, green leaves of deciduous shrubs and forbs, and new spring growth of sedges, when these were available.

Berwick, S. H., and P. A. Jordan. FIRST REPORT OF THE YALE-BOMBAY NATURAL HISTORY SOCIETY STUDIES OF WILD UNGULATES AT THE GIR FOREST, GUJARAT, INDIA. *J. Bombay Nat. Hist. Soc.* 68(2): 412-423. 1971. *WR 147: 46*
[Tex. A&M Univ., College Station.] *"Sus scrofa, Gasella gasella bennetti, Tetraceras quadricornis, Boselaphas tragocamelus, Axis axis,* and *Cervus unicolor."*

Bigalke, R. EARLY RECORDS OF THE OCCURRENCE OF THE IMPALA *(AEPYCEROS MELAMPUS)* IN THE SOUTH-WESTERN TRANSVAAL AND THE NORTH-EASTERN CAPE PROVINCE. *South African J. Sci.* 67(11): 500-501. 1971. [From Biol. Abstr. 54(1), 1972.] *WR 147: 46*

Cabral, J. Crawford. ALGUNS ASPECTOS DA ECOLOGIE DA PALANCA REAL *(HIPPOTRAGUS NIGER VARIANI* THOMAS*)*. [SOME ASPECTS OF THE ECOLOGY OF *HIPPOTRAGUS NIGER VARIANI* THOMAS.] *Bol. Inst. Invest. Cient. Angola* 7(1): 9-42, illus. 1970. [From Biol. Abstr. 54(3), 1972. In Spanish with French and English summ.] *WR 147: 46*
[Inst. Invest. Cient. Angola, Luanda, Angola.]

Cameron, R. D., and J. R. Luick. SEASONAL CHANGES IN TOTAL BODY WATER, EXTRACELLULAR FLUID, AND BLOOD VOLUME IN GRAZING REINDEER *(RANGIFER TARANDUS)*. *Canadian J. Zool.* 50(1): 107-116, illus. 1972. [From Biol. Abstr. 54(1), 1972. In English with French summ.] *WR 147: 46*
[Univ. Alaska, College.]

Carpenter, Len H., and Gary L. Williams. A LITERATURE REVIEW ON THE ROLE OF MINERAL FERTILIZERS IN BIG GAME RANGE IMPROVEMENT. *Colo. Div. Game Fish Parks Spec. Rep.* no. 28. 25 p. May 1972. Price $1.00. *WR 147: 47*
Two papers are contained in this report. "Effects of Nitrogen Fertilizer and 2, 4-D Herbicide on Range Forage Production and Use," by Len H. Carpenter, and "Soil Fertilizers in Wildlife Management," by Gary L. Williams.

Caughley, Graeme. THE SEASON OF BIRTHS FOR NORTHERN HEMISPHERE UNGULATES IN NEW ZEALAND. *Mammalia* 35(2): 204-219, illus. 1971. [From Biol. Abstr. 54(4), 1972. In English with French summ.] *WR 147: 47*
[Univ. Sydney, Sydney, Australia.]

Chapman, D. I. THE FALLOW DEER SITUATION IN EPPING FOREST, ESSEX. *Biol. Conserv.* 1(3): 252-253. Apr. 1969. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 47*

Cooperrider, Allen Y. COMPETITION FOR FOOD BETWEEN MULE DEER AND BIGHORN SHEEP ON ROCK CREEK WINTER RANGE, MONTANA. *M.S. thesis, Univ. Mont.* 91 p. 1969. *WR 147: 47*

Craighead, John J., Gerry Atwell, and Bart W. O'Gara. ELK MIGRATIONS IN AND NEAR YELLOWSTONE NATIONAL PARK. *Wildl. Monogr.* no. 29. 46 p., 38 figs. Aug. 1972. *WR 147: 47*
[Univ. Mont., Missoula.] The following aspects of elk *(Cervus canadensis nelsoni)* are described: distribution and movements of elk on the winter range, sightings of marked elk on summer ranges in Yellowstone National Park, distribution of elk from trap sites to summer ranges, return of individual elk to specific winter and summer ranges, and the migration patterns of the Gallatin and Wyoming herds.

du Plessis, S. S. ECOLOGY OF BLESBOK WITH SPECIAL REFERENCE TO PRODUCTIVITY. *Wildl. Monogr.* no. 30. 70 p., 22 figs. Aug. 1972. *WR 147: 47*
[Transvaal Provincial Admin., Pretoria, South Africa.] The following aspects of the blesbok's *(Damaliscus dorcas phillipsi)* ecology are discussed: taxonomy and distribution, the study area, analysis of the vegetation, population dynamics, behavior, food habits, productivity, and management.

Firouz, E. INVESTIGATION OF POPULATION DYNAMICS OF THE WILD SHEEP IN NORTH-EASTERN IRAN. *Biol. Conserv.* 1(3): 254-255. Apr. 1969. [From J. Mammal. 53 (2, suppl.), 1972.] *WR 147: 47*

Franzmann, Albert W. ENVIRONMENTAL SOURCES OF VARIATION OF BIGHORN SHEEP PHYSIOLOGIC VALUES. *J. Wildl. Manage.* 36(3): 924-932. July 1972. *WR 147: 47*
[Kenai Moose Res. Cent., Soldatna, Alaska.] Abstract: Physiologic values were obtained from 220 bighorn sheep *(Ovis canadensis)* from diverse parts of their range and under diverse environmental conditions. Evaluating and testing the sources of variation narrowed the main effects under this experimental design and model to subspecies, captive or wild, condition, excitability, habitat, subspecies x captive, and excitability x captive classes. Application of physiologic values to bighorn management was demonstrated with blood urea nitrogen (BUN) values reflecting protein intake, glucose and rectal temperature reflecting excitability, and packed cell volume (PCV) reflecting condition. Less significant effects and relationships were discussed, and the potential of different sources of variation under different conditions was assessed.

Frauca, H. THE ASIAN WATER BUFFALO IN AUSTRALIA. *Loris* (Colombo) 12(3): 131-134. June 1971. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 47*

Furniss, M. M. A PRELIMINARY LIST OF INSECTS AND MITES THAT INFEST SOME IMPORTANT BROWSE PLANTS OF WESTERN BIG GAME. *U.S. For. Serv. Res. Note INT* no. 155. 16 p. Feb. 1972. *WR 147: 47*
[Univ. Idaho, Moscow.]

Gebczyńska, Zofia, and Małgorzata Krasińska. FOOD PREFERENCES AND REQUIREMENTS OF THE EUROPEAN BISON. *Acta Theriol.* 17(10): 105-117, 1 fig. May 1972. In English with Polish summ. *WR 147: 48*
[Polish Acad. Sci., Białowieża, Poland.]

Gross, Jack E. CRITERIA FOR BIG GAME PLANNING: PERFORMANCE MEASURES VS. INTUITION. *Trans. N. Am. Wildl. Nat. Resour. Conf.* 37: 246-259, 7 figs. 1972. *WR 147: 48*
[Colo. Coop. Wildl. Res. Unit, Fort Collins.] Summary: A basic need for efficient decision making in management is information that accurately reflects the results of management activities. Components whose values are predictably related to a system's output are the system's performance measures. A big game system's components exhibit features such as non-linearities, thresholds and dictated by intuitive evaluation of the components. Such a counterintuitive mechanism in some deer and elk populations indicates that several traditional planning criteria are not valid performance measures for producing maximum output. Simulation modeling is suggested as a means to help eliminate intuitive judgement and to help develop valid performance measures.

Guinness, F., G. A. Lincoln, and R. V. Short. THE REPRODUCTIVE CYCLE OF THE FEMALE RED DEER, *CERVUS ELAPHUS* L. *J. Reprod. Fertil.* 27(3): 427-438 + 2 pls. Dec. 1971. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 48*

Henry, Vernon G., and Richard H. Conley. FALL FOODS OF EUROPEAN WILD HOGS IN THE SOUTHERN APPALACHIANS. *J. Wildl. Manage.* 36(3): 854-860. July 1972. *WR 147: 48*
[USDA, Federal Bldg., Lufkin, Tex.]

Heymans, J. C. LES ANTILOPES DE LA PROVINCE DU KATANGA. [THE ANTELOPES OF KATANGA PROVINCE (DEMOCRATIC REPUBLIC OF THE CONGO).] *Nat. Belg.* 52(3): 147-156, illus. 1971. [From Biol. Abstr. 54(3), 1972. In French.] *WR 147: 48*
[Univ. Off. Congo, Lubumbashi, Congo.] Abstract: Systematic study of the antelopes of Katanga Province was conducted and the 19 spp. belonging to 8 subfamilies were briefly discussed as to various aspects of their ecology. The existence and protection of national parks and nature preserves have allowed certain disappearing species to subsist, i.e., *Damaliscus lunatus* Burchell, *Oreotragus saltator* Zimmerman, *Ourebia ourebi ourebi* Zimmerman, *Adenota vardoni vardoni* Livingstone, and *Aepyceros melampus katangae* Lonnberg (the last 2 are especially close to the point of disappearing). Large antelopes *(Hippotragus, Taurotragus,* etc.*)* are better represented, but herd numbers have considerably dwindled in comparison with what they used to be.

Kishchinskii, A. A. [THE FORMATION OF DISTINCTIONS IN AN ISOLATED INSULAR POPULATION OF WILD REINDEER.] *Byull. Mosk. O-va. Ispyt. Prir. Otd. Biol.* 76(1): 69-78, illus. 1971. [From Biol. Abstr. 54(5), 1972. In Russian with English summ.] *WR 147: 48*

Lavov, M. A. [THE MODELLING OF CHANGES IN ABUNDANCE AND COMPOSITION OF ROE DEER HERDS.] *Byull. Mosk. O-va. Ispyt. Prir. Otd. Biol.* 76(4): 33-36. 1971. [From J. Mammal. 53(2, suppl.), 1972. In Russian.] *WR 147: 48*

Lobanov, P. N. [CHARACTERISTICS OF THE DISPOSITION, STRUCTURE, AND REPRODUCTION OF A MUSK DEER POPULATION IN EASTERN SAYAN.] *Ekologiya* 1(6): 94-99, illus. 1970. [From Biol. Abstr. 54(6), 1972. In Russian.] *WR 147: 48*
"Moschus moschiferus."

Maskovtsev, A. A., editor. [THE BEHAVIOUR OF ANIMALS AND PROBLEM OF THEIR DOMESTICATION.] *Trudy Mosk. O-va. Ispyt. Prir. Otd. Biol.* 35. 103 p., illus. 1969. Price 72 kopecks. In Russian with English summ. *WR 147: 48*
The following papers deal with wild animals: *Behavioural changes in elk in the process of its domestication*, E. P. Knorre, and *The behaviour of a Middle-Asian gazelle in desert in connection with the animal's watering sites*, I. I. Yahrov.

Mentis, Michael T. A REVIEW OF SOME LIFE HISTORY FEATURES OF THE LARGE HERBIVORES OF AFRICA. *Lammergeyer* 16: 1-89. Aug. 1972. *WR 147: 49*
[Natal Parks Board, P.O. Box 662, Pietermaritzburg, Natal, South Africa.] Life history information of 81 spp. of African herbivores.

Morrison, J. A. MORPHOLOGY OF CORPORA LUTEA IN THE UGANDA KOB ANTELOPE, *ADENOTA KOB THOMASI* (NEUMANN). *J. Reprod. Fert.* 26. p. 297-305, 12 figs. (1971). *WR 147: 49*
[Okla. State Univ., Stillwater.]

Morrison, J. A., and H. K. Buechner. REPRODUCTIVE PHENOMENA DURING THE *POST PARTUM*--PRECONCEPTION INTERVAL IN THE UGANDA KOB. *J. Reprod. Fert.* 26. p. 307-317. (1971). *WR 147: 49*
[Okla. State Univ., Stillwater.] *"Adenota kob thomasi."*

Nasimovich, A. A. [COMPARATIVE EFFECTIVENESS OF THE USE OF PASTURES BY DOMESTICATED AND WILD UNGULATES.] *Ekologiya* 1(1): 8-17. 1970. [From Biol. Abstr. 54(5), 1972. In Russian.] *WR 147: 49*
[Inst. Geogr., Acad. Sci. USSR, Moscow, USSR.] The considerable experience of breeding wild ungulates on South African farms is of definite scientific interest, and its practical value and possibility of application extend beyond just Africa alone. Such a situation is quite possible in other parts of the world, when even primitive, initial domestication of representatives of indigenous wild animals, especially ungulates, can prove to be more advantageous than laborious and economically unwarranted animal husbandry aimed at keeping and breeding animals absolutely unadapted to local conditions. The breeding of wild ungulates and their partial domestication will allow better and fuller use of local natural resources and help to meet man's needs for wool, milk, and various dairy products.

Neiland, Kenneth A., and Clarice Dukeminier. A BIBLIOGRAPHY OF THE PARASITES, DISEASES AND DISORDERS OF SEVERAL IMPORTANT WILD RUMINANTS OF THE NORTHERN HEMISPHERE / REINDEER AND CARIBOU, GENUS *RANGIFER* MOOSE, GENUS *ALCES* SHEEP AND RELATED MOUNTAIN GAME DEER, GENUS *ODOCOILEUS*. *Alaska Dep. Fish Game Wildl. Tech. Bull.* no. 3. ii + 151 p. June 1972. *WR 147: 49*
Four bibliographies are included. Each is divided into four major categories according to the kind of pathogen which is the primary or only topic of each reference cited: Protozoa; helminths; arthropods; and bacterial, viral, and miscellaneous diseases or disorders. In some cases very brief annotations are included. Full titles of the periodicals and other publications cited for the references are presented in the appendix.--From intro.

Padaiga, V. I. [FACTORS OF WINTER LOSS IN THE ROE-DEER *(CAPREOLUS CAPREOLUS)*.] *Zool. Zh.* 50(10): 1546-1552, illus. 1971. [From Biol. Abstr. 54(1), 1972. In Russian with English summ.] *WR 147: 49*

Priklonskii, S. G., and V. V. Chervonnyi. [FERTILITY OF THE MOOSE IN CENTRAL AREAS OF THE EUROPEAN PART OF THE RYAZAN REGION USSR.] *Ekologiya* 1(2): 100-101, illus. 1970. [From Biol. Abstr. 54(3), 1972. In Russian.] *WR 147: 49*

Prisyazhnyuk, V. E. [CASES OF ASYMMETRY, ABNORMAL STRUCTURE, AND HORN INJURY IN THE WILD AXIS DEER *(CERVUS NIPPON* T.).] *Zool. Zh.* 50(9): 1380-1387, illus. 1971. [From Biol. Abstr. 54(1), 1972. In Russian with English summ.] *WR 147: 49*
[Acad. Sci. USSR, Moscow, USSR.]

Prisyazhnjuk, V. E. [MATERIALS TO AGE DETERMINATION IN SIKA DEER, ISUBRA, AND ROE DEER BY THE ANNUAL LAYERS OF DENTINE CEMENT.] *Byull. Mosk. O-va. Ispyt. Prir. Otd. Biol.* 76(4): 22-32. 1971. [From J. Mammal. 53(2, suppl.), 1972. In Russian with English summ.] *WR 147: 49*

Rautenbach, I. L. AGING CRITERIA IN THE SPRINGBOK, *ANTIDORCAS MARSUPIALIS* (ZIMMERMANN, 1780) (ARTIODACTYLA: BOVIDAE). *Ann. Transvaal. Mus.* 27(6): 83-133, illus. 1971. [From Biol. Abstr. 54(1), 1972.] *WR 147: 50*
[Transvaal Mus., Pretoria, South Africa.]

Richter, Wolfgang von. REPORTS FROM THE MAMMAL RESEARCH UNIT: 4. PAST AND PRESENT DISTRIBUTION OF THE BLACK WILDEBEEST, *CONNOCHAETES GNOU* ZIMMERMANN (ARTIODACTYLA: BOVIDAE) WITH SPECIAL REFERENCE TO THE HISTORY OF SOME HERDS IN SOUTH AFRICA. *Ann. Transvaal Mus.* 27(4): 35-57, illus. 1971. [From Biol. Abstr. 54(1), 1972.] *WR 147: 50*
[Univ. Pretoria, Pretoria, South Africa.]

Schoen, A. THE EFFECT OF HEAT STRESS AND WATER DEPRIVATION ON THE ENVIRONMENTAL PHYSIOLOGY OF BUSHBUCK, REEDBUCK AND UGANDA KOB. *East African Agric. For. J.* (Nairobi) 37(1): 1-7. July 1971. [From *J. Mammal.* 53(2, suppl.), 1972.] *WR 147: 50*

Shibata, Toshi. [OBSERVATIONS ON THE DIURNAL ACTIVITY OF THE SIKA DEER, *CERVUS NIPPON CENTRALIS* KISHIDA, ON THE ISLAND OF KINKAZAN IN NORTHEASTERN JAPAN.] *Sci. Rep. Yokosuka City Mus.* 15. p. 97-111, illus. 1969. [From Biol. Abstr. 54(2), 1972. In Japanese with English summ.] *WR 147: 50*
[Yokosuka City Mus., Yokosuka, Japan.]

Snyder, Roy Owen. FORAGE COMPETITION BETWEEN CATTLE AND ELK IN THE GIRD CREEK DRAINAGE OF WESTERN MONTANA. *M.S. thesis, Univ. Mont.* 91 p. 1969. *WR 147: 50*

Stone, Joel L. WINTER MOVEMENTS AND DISTRIBUTION OF MOOSE *(ALCES ALCES SHIRASI)* IN UPPER ROCK CREEK DRAINAGE, GRANITE COUNTY, MONTANA. *M.S. thesis, Univ. Mont.* 80 p. 1971. *WR 147: 50*

Strandgaard, H. STUDIES ON THE BEHAVIOUR OF MARKED ROE DEER WITH RELATION TO THE REGULATION OF THEIR NUMBERS. *J. British Deer Soc.* 2(5): 665-668, 4 figs. 1971. *WR 147: 50*
[Game Biol. Sta., Kalø, Rønde, Denmark.] Paper delivered at the International Game Biology Congress, Moscow, 1969.

Strandgaard, H. AN INVESTIGATION OF CORPORA LUTEA, EMBRYONIC DEVELOPMENT, AND TIME OF BIRTH OF ROE DEER *(CAPREOLUS CAPREOLUS)* IN DENMARK. *Danish Rev. Game Biol.* 6(7). 22 p., 6 figs. 1972. In English with Danish and Russian summ. *WR 147: 50*
[Game Biol. Sta., Kalø, Rønde, Denmark.] During the winter 1970, 24 pregnant roe deer *(Capreolus capreolus)* were shot in three different districts of Denmark for a study of the relationship between the number of corpora lutea of pregnancy and the resulting number of embryos to be made. The 24 deer shot contained altogether 48 corpora lutea, and 46 embryos were found. In females with two embryos, there was always an embryo in each horn of the uterus, whether both ova came from the same ovary or one from each.--From summ.

Weaver, Richard A. DESERT BIGHORN SHEEP IN DEATH VALLEY NATIONAL MONUMENT AND ADJACENT AREAS. *Calif. Dep. Fish Game Wildl. Manage. Adm. Rep.* no. 72-4. 20 p. Mar. 1972. *WR 147: 50*
The current bighorn sheep population for the entire area is estimated to be 600 animals. The previous estimate for the area was 900 animals. This decline is similar to declines experienced elsewhere in desert areas over the past 15 years. Some springs have gone out of service during this time. There is a large burro population in much of the Panamint Range, and their distribution and numbers have increased during the past ten years.--From abstr.

Weaver, Richard A., and John Hall. DESERT BIGHORN SHEEP IN SOUTHEASTERN SAN BERNARDINO COUNTY. *Calif. Dep. Fish Game Wildl. Manage. Adm. Rep.* no. 71-8. 28 p. Oct. 1971. *WR 147: 50*
The current bighorn sheep population for this area is estimated to be a minimum of 175 animals--previous best estimate for the area was 85. The increase is accounted for largely by increased knowledge of the area.--From abstr.

Weaver, Richard A., and John M. Hall. BIGHORN SHEEP IN THE CLARK, KINGSTON AND NOPAH MOUNTAIN RANGES (SAN BERNARDINO AND INYO COUNTIES). *Calif. Dep. Fish Game Wildl. Manage. Adm. Rep.* no. 72-3. 17 p., illus. Feb. 1972. *WR 147: 51*

The total current bighorn population for this area is estimated to be 80 animals as compared with a previous estimate of 55 made in 1955. No actual increase of bighorn has occurred. The difference in estimates is attributed to the improved methods of investigation reflecting a more realistic count. Evidence indicates that the total bighorn population in this area has declined from former numbers due primarily to competition with livestock and increased human activities. Water sources are inadequate throughout this study area. In much of the bighorn range, only small amounts of water are available seasonally.--From abstr.

Weaver, Richard A., and Jerry L. Mensch. DESERT BIGHORN SHEEP IN NORTHERN INYO AND SOUTHERN MONO COUNTIES. *Calif. Dep. Fish Game Wildl. Manage. Adm. Rep.* no. 70-7. 10 p. Oct. 1970. *WR 147: 51*

Populations are quite low and scattered and in all cases appear to be below the carrying capacity of the range. Causes of the low populations are unknown but disease, drought and competition with feral burros probably were contributing factors. The population estimate for the area investigated is 165 animals.--From abstr.

Weaver, Richard A., and Jerry L. Mensch. BIGHORN SHEEP IN NORTHEASTERN RIVERSIDE COUNTY. *Calif. Dep. Fish Game Wildl. Manage. Adm. Rep.* no. 71-1. 8 p. Jan. 1971. *WR 147: 51*

Water sources are severely limited with sheep apparently existing on runoff water captured in seasonal rock tanks (tinajas) or potholes. This portion of the desert has been severely affected by the prolonged drought of the last two decades. Trailing indicates that populations of bighorn once existed in all mountain ranges within the study area and that water supplies were much more widespread.--From abstr.

Weaver, Richard A., and Jerry L. Mensch. BIGHORN SHEEP IN SOUTHWESTERN SAN BERNARDINO. *Calif. Dep. Fish Game Wildl. Manage. Adm. Rep.* no. 71-2. 14 p., 1 fig. May 1971. *WR 147: 51*

Results of the investigation show very sparse populations of bighorn and apparent loss of sheep populations in some mountain ranges. The total population estimated for this area is 15 animals as compared with previous estimates of 55 made in 1955. Severe and prolonged drought appears to be the main cause of sheep population declines although competition with livestock and illegal shooting may have contributed. Water sources are in very short supply. No springs were found in the Bullion or Sheephole Mountains. The few bighorn occupying these ranges appear to exist on water stored in natural tanks (tinajas). Artificial watering devices could assist in alleviating this problem and increase the sheep population.--From abstr.

Weaver, Richard [A.], Jerry L. Mensch, Wesley Timmerman, and John M. Hall. BIGHORN SHEEP IN THE SAN GABRIEL AND SAN BERNARDINO MOUNTAINS. *Calif. Dep. Fish Game Wildl. Manage. Adm. Rep.* no. 72-2. 38 p. Jan. 1972. *WR 147: 51*

This investigation was made to gather data on population, distribution, habitat and reproduction as well as any other factors which may affect bighorn sheep within this area. The estimated population is 510 for the San Gabriel Mountains, 115 for the San Bernardino Mountains, which totals 625 for the study area. Density of bighorn in suitable habitat is relatively high. Reproduction throughout the study area appears to be sustaining the present population. Problems affecting bighorn within the area are minimal with the major portion of the ranges of three of the four designated herds located within wilderness areas where land use is restricted. Predators appear to be an insignificant factor on sheep populations with only a few instances of natural predation of bighorns indicated. Illegal hunting of bighorn occurs especially in certain areas of easy access and continues to be a problem.--From abstr.

Wetterberg, Gary B. PUDU IN A CHILEAN NATIONAL PARK. *Oryx* 11(5): 347-351, illus. May 1972. *WR 147: 52*
"Pudu pudu."

Worley, David E., Charles K. Anderson, and Kenneth R. Greer. ELAEOPHOROSIS IN MOOSE FROM MONTANA. *J. Wildl. Dis.* 8(3): 242-244, 2 figs. July 1972. *WR 147: 52*
[Mont. State Univ., Bozeman.] Abstract: The ruminant arterial worm *Elaeophora schneideri* is reported for the first time from the moose, *Alces alces*, in Montana. One of four infected animals examined during 1971 was blind and had extensive intimal proliferation in the leptomeningeal arteries, areas of cerebrocortical neuronal necrosis, and numerous hemorrhages in the brain. Similarities were noted in the lesions of elaeophorosis in moose and wapiti.

DEER (Odocoileus)

Anderson, Allen E., Dean E. Medin, and David C. Bowden. CAROTENE AND VITAMIN A IN THE LIVER AND BLOOD SERUM OF A ROCKY MOUNTAIN MULE DEER, *ODOCOILEUS HEMIONUS HEMIONUS* POPULATION. *Comp. Biochem. Physiol.* 41B: 745-758, 3 figs. 1972. *WR 147: 52*
[Colo. Div. Game, Fish & Parks Res. Cent., Fort Collins.]

Garland, Lawrence E. BOW HUNTING FOR DEER IN VERMONT; SOME CHARACTERISTICS OF THE HUNTER, THE HUNT AND THE HARVEST. *Vt. Fish Game Dept.* 19 p. May 1972. *WR 147: 52*
Liberalized bow hunting regulations appear to have little effect on the deer population while providing considerable hunting opportunity. The opportunity to see and attempt to take deer was great while the actual harvest was low.--From abstr.

Gilbert, Fred F. DEER SEASON 1971. *Maine Dept. Inland Fish. Game, Game Div., Leafl. Ser.* 4(2). 15 p., illus. July 1972. *WR 147: 52*
[Univ. Maine, Orono.] A summary of information compiled and analyzed as a result of the 1971 deer hunting season.

Graves, H. B., E. D. Bellis, and W. M. Knuth. CENSUSING WHITE-TAILED DEER BY AIRBORNE THERMAL INFRARED IMAGERY. *J. Wildl. Manage.* 36(3): 875-884, 6 figs. July 1972. *WR 147: 52*
[Pa. State Univ., University Park.] Abstract: The applicability of two types of airborne infrared detector systems for censusing white-tailed deer *(Odocoileus virginianus)* was studied during different seasons and at different altitudes. This method of detecting deer was checked against ground censusing along an interstate highway that traversed the heavily wooded, mountainous study area. We found that detectability from the air was related to time of day, season, altitude, and wavelength sensitivity of the infrared detectors. In preliminary studies, individual cattle were easily detected from an altitude of 1,000 feet, using infrared equipment sensitive in the 3-14 micrometer region of the light spectrum. Deer in shrublands were detected at 100, 250, and at 500 feet during nighttime summer flights, using a 3-14 micron detector; the 3-5 micron detector was found to be a better *hot spot* detector and gave the best image during the summer surveys. In contrast, the 3-4 micrometer detector provided superior images during a nighttime winter flight. The interaction of seasonal and wavelength sensitivity effects were attributed to differential thermal radiation. During winter, the deer's hair surface is more nearly equal to the average background temperature than it is during summer; this would be adaptive in that body heat is apparently freely radiated during the summer and retained during the winter. Although of great potential value as a censusing technique for big game animals, current limitations of the equipment used makes large-scale airborne infrared detection of deer impractical unless the census area is flat and relatively free of obstructing vegetation. Extensive work with the equipment described here disclosed that nighttime surveys are more likely to be successful

than daytime flights unless the sky is heavily overcast. Difficulties with interference from large amounts of reflected solar radiation in the shorter wavelengths of the infrared spectrum are likely to be encountered in daytime operations, especially on clear days. Refinement of the technique will undoubtedly provide a powerful tool for studying population dynamics and behavior of big game species.

Harger, Elsworth M., and Jack L. Cook. THE SOUTH FOX ISLAND DEER STORY. *Mich. Dep. Nat. Resour. Res. & Dev. Rep.* no. 264. 20 p., 2 figs. Apr. 1972. *WR 147: 53*

"Since it is highly doubtful that the island's deer can be controlled through public hunting or that the habitat can be adequately managed for them it is recommended that the herd be eradicated from the island."

Hildebrand, Peter R. BIOLOGY OF WHITE-TAILED DEER ON WINTER RANGES IN THE SWAN VALLEY, MONTANA. *M.S. thesis, Univ. Mont.* 91 p. 1971. *WR 147: 53*

Hoekstra, Thomas Wayne. ECOLOGY AND POPULATION DYNAMICS OF WHITETAILED DEER ON CRANE NAVAL AMMUNITION DEPOT, INDIANA. *Ph.D. thesis, Purdue Univ.* 436 p. 1972. [From Diss. Abstr. Int. B Sci. Eng. 33(2), 1972.] *WR 147: 53*

Lambiase, J. T., Jr., R. P. Amann, and J. S. Lindsey. ASPECTS OF REPRODUCTIVE PHYSIOLOGY OF MALE WHITE-TAILED DEER. *J. Wildl. Manage.* 36(3): 868-875, 1 fig. July 1972. *WR 147: 53*

[Pa. State Univ., University Park.] Abstract: Several aspects of reproductive physiology in white-tailed deer *(Odocoileus virginianus borealis)* were investigated, using captive and wild bucks in Pennsylvania. Five captive bucks--three 1.5-year-olds and two 2.5-year-olds--were electroejaculated biweekly from August through March. Between early October and late February, these captive deer ejaculated motile sperm in quantities considered sufficient for successful breeding. Sperm output was maximal in mid-November when an average of 3.4×10^9 sperm per ejaculate was obtained. Both sperm concentration and the total number of sperm per ejaculate were greater for 2.5-year-old deer than for yearlings. Based on data for 40 wild deer killed between October and December, testicular weight was greater with increasing age from 0.5 to 4.5 years. Sperm reserves in the two testes, capita-corpora, and caudae epididymides of seven yearlings and three older deer averaged 7.6, 4.4, and 12.1×10^9 and 8.7, 3.4, and 7.9×10^9, respectively. Male white-tailed deer probably are incapable of breeding as many females in one season as male domestic sheep but should be capable of completing at least one successful mating daily.

Mattfeld, George F., Joseph E. Wiley III, and Donald F. Behrend. SALT VERSUS BROWSE--SEASONAL BAITS FOR DEER TRAPPING. *J. Wildl. Manage.* 36(3): 996-998. July 1972. *WR 147: 53*

[State Univ. Coll. Environ. Sci. & For., Newcomb, N.Y.] Abstract: Capturing white-tailed deer *(Odocoileus virginianus)* in box traps with rock salt from May to July was as effective as trapping them with browse bait in winter (January to March). In winter, 1,874 trap-days resulted in a new capture every 28.4 trap-days, as compared with a new capture every 31.1 trap-days during 4,137 spring-summer trap-days.

Mosby, Henry S. A "WONDER" DRUG FROM DEER? *Va. Wildl.* 33(9): 17-18, illus. Sept. 1972. *WR 147: 53*

[Va. Polytech. Inst., Blacksburg.] A popular account of the healing properties of bezoars.

Myers, James E. THE DEER OF RHODE ISLAND. *R.I. Dep. Nat. Resour. Div. Fish Wildl.* 17 p., 3 figs. July 1972. *WR 147: 53*

History, harvest, age composition, mortality, distribution and life history of the deer in Rhode Island.

Owens, Larry. AVERAGE DEER KILL RECORDED IN 1971. *Ark. Game & Fish Bull.* 5 (1): 10-11, illus. Spring/Summer 1972. *WR 147: 54*
The average deer harvest in Arkansas runs about 25,000 reported kills annually. The kill in 1971 was 24,720, just about average.

Ozoga, John J. AGGRESSIVE BEHAVIOR OF WHITE-TAILED DEER AT WINTER CUTTINGS. *J. Wildl. Manage.* 36(3): 861-868. July 1972. *WR 147: 54*
[Mich. Dep. Nat. Resour., Shingleton.] Abstract: This study was done to determine the effects of social strife upon the behavior and ultimate survival of white-tailed deer *(Odocoileus virginianus)* feeding on browse felled during logging in a conifer swamp deeryard during winter. On the basis of 417 animal interactions, primarily in competition for food, deer display seven basic aggressive actions in establishing dominance: ear drop, hard look, sidle, rush, snorting, strike, and flail. Most conflicts (58 percent) consisted of threats rather than actual physical contact. The frequency of social strife increased toward later winter, but the intensity of combat decreased. Observations of 89 marked deer indicated that most members of the aggregation met one another during the yarding season and that conflict between animals that met frequently was minimal, suggesting that a single, rather stable, social hierarchy promptly developed. Adult bucks 2.5 or more years in age generally dominated all other deer, and mature does normally dominated fawns. Despite the social strife and competition for food at the cutting, overwinter mortality was judged to be considerably lower than that in adjacent overbrowsed areas where deer subsisted on existing forage.

Ozoga, John J., and Leslie W. Gysel. RESPONSE OF WHITE-TAILED DEER TO WINTER WEATHER. *J. Wildl. Manage.* 36(3): 892-896, 3 figs. July 1972. *WR 147: 54*
[Mich. Dep. Nat. Resour., Shingleton.] Abstract: Mechanical traffic counters were used to monitor daily activity of white-tailed deer *(Odocoileus virginianus)* in a conifer swamp deeryard in northern Lower Michigan during the winter of 1963-64. Findings indicate that use of protective (dense) cover by deer increased during periods of low temperature and high calculated *air chill*, despite the lack of deep snow. We assume that differences in recorded activity actually represent shelter-seeking movements of deer into the conifer swamp in response to increasing severity of weather. Based on 748 traffic counts, the most consistent peak of deer activity occurred from mid- to late afternoon, 60 percent of the movement being recorded between sunrise and sunset.

Parker, H. Dennison, Jr., and James C. Harlan. SOLAR RADIATION AFFECTS RADIANT TEMPERATURES OF A DEER SURFACE. *U.S. For. Serv. Res. Note RM* no. 215. 4 p., 2 figs. 1972. *WR 147: 54*
Abstract: Variation in the effective radiant temperature (ERT) of a deer *(Odocoileus hemionus)* hide, when sunlit and shaded, was measured with an infrared radiometer. The mean decrease in ERT was 18.3° C. in 120 seconds after shade was applied. The authors conclude that missions for deer detection by an airborne thermal infrared scanner should be conducted during periods of no direct-beam solar radiation, that is, sunset to dawn.

Prestwood, Annie K., and Theodore R. Ridgeway. ELAEOPHOROSIS IN WHITE-TAILED DEER OF THE SOUTHEASTERN U.S.A.: CASE REPORT AND DISTRIBUTION. *J. Wildl. Dis.* 8(3): 233-236, 1 fig. July 1972. *WR 147: 54*
[Univ. Ga., Athens.] Abstract: Impaired function of the mylo-hyoideus muscles was associated with and possibly caused by arterial worm, *Elaeophora schneideri*, infection in an aged white-tailed deer *(Odocoileus virginianus)*. Subsequent to this observation, *E. schneideri* was found in 12 white-tailed deer from four widely separated coastal plain counties in the states of Florida, Georgia, and South Carolina, U.S.A.

Scheelhaase, Kenneth, and Ross MacLennan. LOCKED ANTLERS OF MULE DEER AND WHITE-TAILED DEER. *Blue Jay* 30(2): 106-107, illus. June 1972. *WR 147: 54*
[Saskatchewan Dep. Nat. Resour., Saskatoon, Saskatchewan, Canada.] A mule deer *(Odocoileus hemionus)* and a white-tail deer buck *(O. virginianus)* were found dead with their antlers locked together.

Shafer, Elwood L., Jr., Paul H. Amidon, and C. W. Severinghaus. A COMPARISON OF VIOLATORS AND NONVIOLATORS OF NEW YORK'S DEER-HUNTING LAWS. *J. Wildl. Manage.* 36(3): 933-939, 1 fig. July 1972. *WR 147: 55*

[NE For. Exp. Sta., Upper Darby, Pa.] Abstract: A 1967 survey of 1,140 New York hunters revealed several differences and similarities between respondents who were known to have violated deer-hunting laws and respondents who were not known to have done so. Violators of the laws legally killed significantly more deer per year of hunting experience than nonviolators. Although violators contacted law enforcement officers more often, and, in certain regions of the state, felt that there was justification for breaking game laws if it were done accidentally or for food, they did not feel justified for breaking the laws to obtain psychological benefits such as the challenge or excitement involved. Both groups of hunters had similar investment costs for equipment and similar attitudes about various hunting regulations. Dissatisfaction with those regulations centered mainly on laws that regulated the distribution of hunters and their behavior patterns rather than on laws that directly regulated the number of deer harvested.

Sinha, A. A., U. S. Seal, and R. P. Doe. ULTRASTRUCTURE OF THE CORPUS LUTEUM OF THE WHITE-TAILED DEER DURING PREGNANCY. *Am. J. Anat.* 132(2): 189-206. Oct. 1971. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 55*

Stout, Gene G. A NATIONWIDE SURVEY OF ANTLERLESS HARVEST AS A DEER MANAGEMENT TOOL. *Okla. Dep. Wildl. Conserv.* 26 p., 6 figs. 20 June 1972. *WR 147: 55*

A preliminary study based on replies of 46 states surveyed.

Thilenius, John F. CLASSIFICATION OF DEER HABITAT IN THE PONDEROSA PINE FOREST OF THE BLACK HILLS, SOUTH DAKOTA. *U.S. For. Serv. Res. Pap. RM* no. 91. 28 p., 14 figs. May 1972. *WR 147: 55*

Abstract: The ponderosa pine forest was classified into 13 habitat units by cluster analysis of a similarity matrix based on the vegetation, soil, and site attributes of 100 randomly located sample stands. Habitat units were defined at a minimum similarity of 60 percent. The comparative use of the habitats by deer was evaluated by analysis of variance of long-term (9 years) data on deer pellet group densities in the sample stands.

Ullrey, D. E., W. G. Youatt, H. E. Johnson, A. B. Cowan, R. L. Covert, and W. T. Magee. DIGESTIBILITY AND ESTIMATED METABOLIZABILITY OF ASPEN BROWSE FOR WHITE-TAILED DEER. *J. Wildl. Manage.* 36(3): 885-891, 1 fig. July 1972. *WR 147: 55*

[Mich. State Univ., East Lansing.]

Veteto, George, C. E. Davis, Ray Hart, and R. M. Robinson. AN ESOPHAGEAL CANNULA FOR WHITE-TAILED DEER. *J. Wildl. Manage.* 36(3): 906-912, 4 figs. July 1972. *WR 147: 55*

[Tex. Park & Wildl. Dep., Tennessee Colony.] Abstract: This paper describes the esophageal fistula as a technique for studying the food habits of white-tailed deer *(Odocoileus virginianus)*. During a 2-year period, nine adult deer were esophageally fistulated and implanted with plastic cannulas. The test animals, all gentle deer, consisted of five does and four bucks. The fistula was located slightly posterior to the midpoint of the deer's neck. The deer were ready for field use within 4 to 6 weeks after the operation. A plastic container shaped to fit the deer's neck was used to collect forage samples falling through the cannula opening into the collection bag. A rubber stopper closed the cannula opening between collection periods. Food impaction in the restricted area of the esophagus occurred periodically throughout the life of most animals. No losses of deer occurred during surgery or as a direct result of the operation. Four deer died within 3 months of the operation, but five animals lived five months or longer. One has survived over three years. The primary cause of death was pressure necrosis that occurred at the terminal ends of the cannula wings. The most suitable cannula was a butyrate plastic modification of the acrylic type

Owens, Larry. AVERAGE DEER KILL RECORDED IN 1971. *Ark. Game & Fish Bull.* 5 (1): 10-11, illus. Spring/Summer 1972. *WR 147: 54*
The average deer harvest in Arkansas runs about 25,000 reported kills annually. The kill in 1971 was 24,720, just about average.

Ozoga, John J. AGGRESSIVE BEHAVIOR OF WHITE-TAILED DEER AT WINTER CUTTINGS. *J. Wildl. Manage.* 36(3): 861-868. July 1972. *WR 147: 54*
[Mich. Dep. Nat. Resour., Shingleton.] Abstract: This study was done to determine the effects of social strife upon the behavior and ultimate survival of white-tailed deer *(Odocoileus virginianus)* feeding on browse felled during logging in a conifer swamp deeryard during winter. On the basis of 417 animal interactions, primarily in competition for food, deer display seven basic aggressive actions in establishing dominance: ear drop, hard look, sidle, rush, snorting, strike, and flail. Most conflicts (58 percent) consisted of threats rather than actual physical contact. The frequency of social strife increased toward later winter, but the intensity of combat decreased. Observations of 89 marked deer indicated that most members of the aggregation met one another during the yarding season and that conflict between animals that met frequently was minimal, suggesting that a single, rather stable, social hierarchy promptly developed. Adult bucks 2.5 or more years in age generally dominated all other deer, and mature does normally dominated fawns. Despite the social strife and competition for food at the cutting, overwinter mortality was judged to be considerably lower than that in adjacent overbrowsed areas where deer subsisted on existing forage.

Ozoga, John J., and Leslie W. Gysel. RESPONSE OF WHITE-TAILED DEER TO WINTER WEATHER. *J. Wildl. Manage.* 36(3): 892-896, 3 figs. July 1972. *WR 147: 54*
[Mich. Dep. Nat. Resour., Shingleton.] Abstract: Mechanical traffic counters were used to monitor daily activity of white-tailed deer *(Odocoileus virginianus)* in a conifer swamp deeryard in northern Lower Michigan during the winter of 1963-64. Findings indicate that use of protective (dense) cover by deer increased during periods of low temperature and high calculated *air chill*, despite the lack of deep snow. We assume that differences in recorded activity actually represent shelter-seeking movements of deer into the conifer swamp in response to increasing severity of weather. Based on 748 traffic counts, the most consistent peak of deer activity occurred from mid- to late afternoon, 60 percent of the movement being recorded between sunrise and sunset.

Parker, H. Dennison, Jr., and James C. Harlan. SOLAR RADIATION AFFECTS RADIANT TEMPERATURES OF A DEER SURFACE. *U.S. For. Serv. Res. Note RM* no. 215. 4 p., 2 figs. 1972. *WR 147: 54*
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Veteto, George, C. E. Davis, Ray Hart, and R. M. Robinson. AN ESOPHAGEAL CANNULA FOR WHITE-TAILED DEER. *J. Wildl. Manage.* 36(3): 906-912, 4 figs. July 1972. *WR 147: 55*

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commonly used on sheep and cattle. It was stronger, lighter in weight, and more resistant to weather-cracking than the acrylic model. Results indicate that white-tailed deer can be successfully esophageally fistulated and used as collection animals for dietary studies.

Watkins, Ross K., and Philip J. Urness. MAXILLARY CANINE AND SUPERNUMERARY INCISORS IN ARIZONA COUES WHITE-TAILED DEER. *Southwest. Nat.* 17(2): 211-213, 2 figs. 15 Sept. 1972. *WR 147: 56*
[Rocky Mountain For. Range Exp. Sta., Tempe, Ariz.]

White, Marshall, Frederick F. Knowlton, and W. C. Glazener. EFFECTS OF DAM-NEWBORN FAWN BEHAVIOR ON CAPTURE AND MORTALITY. *J. Wildl. Manage.* 36(3): 897-906, 1 fig. July 1972. *WR 147: 56*
[Univ. Calif., Berkeley.] Abstract: The behavior pattern of white-tailed deer *(Odocoileus virginianus)* dams and newborn fawns was studied in south Texas. Understanding and concentrating on the behavior of the dam allows capture of large numbers of the normally cryptic young fawns. During the first days of life, fawns remain isolated and bedded most of the time. Dams seek out their fawns only a few times a day for nursing and grooming. Recognizing stereotyped behavior patterns and postures elicited when the dam is with or near a fawn greatly facilitates the location and capture of fawns. A description of white-tail fawns 1-2 days old is given. Capture, and particularly the marking, of young fawns increased mortality. We recommend that precautions be taken to minimize mortality, especially in areas where predators are common.

MAMMALS--MARINE

Bender, Thomas R., T. Stephen Jones, Wallis E. DeWitt, Gary J. Kaplan, Arnold R. Saslow, S. Edward Nevius, Paul S. Clark, and Eugene J. Gangarosa. SALMONELLOSIS ASSOCIATED WITH WHITE WHALE MEAT IN AN ESKIMO COMMUNITY. SEROLOGIC AND BACTERIOLOGIC METHODS AS ADJUNCTS TO AN EPIDEMIOLOGIC INVESTIGATION. *Am. J. Epidemiol.* 96(2): 153-160, 1 fig. Aug. 1972. *WR 147: 56*
[CDC, 225 Eagle St., Anchorage, Alaska.] In August 1969, an outbreak of *Salmonella enteritidis* gastroenteritis occurred in Tununak, Alaska, a small Eskimo village on the Bering Sea. Illness histories obtained from all 265 villagers revealed that 105 persons had symptoms compatible with salmonellosis for an overall attack rate of 40%. Symptoms consisted of fever, chills, nausea, vomiting, cramps, and diarrhea. Of the 99 persons who ate whale meat, 93 (94%) became ill.--From abstr.

Bonner, W. N. AN AGED GRAY SEAL *(HALICHOERUS GRYPUS)*. *J. Zool.* 164(2): 261 + 2 pls. June 1971. [From *J. Mammal.* 53(2, suppl.), 1972.] *WR 147: 56*

Bonner, W. Nigel, and Grace Hickling. THE GREY SEALS OF THE FARNE ISLANDS. REPORT FOR THE PERIOD OCTOBER 1969 TO JULY 1971. *Trans. Nat. Hist. Soc. Northumberland, Durham, Newcastle upon Tyne* 17(4, New Ser.): 141-162, 6 figs. + 1 pl. Late Oct. 1971. *WR 147: 56*
Both the 1969 and 1970 breeding seasons are covered in this report.

Brodie, Paul F. SIGNIFICANCE OF ACCESSORY CORPORA LUTEA IN ODONTOCETES WITH REFERENCE TO *DELPHINAPTERUS LEUCAS*. *J. Mammal.* 53(3): 614-616, 1 fig. Aug. 1972. *WR 147: 56*
[Marine Ecol. Lab., Bedford Inst., Dartmouth, Nova Scotia, Canada.]

Burns, John J., G. Carleton Ray, Francis H. Fay, and Peter D. Shaughnessy. ADOPTION OF A STRANGE PUP BY THE ICE-INHABITING HARBOR SEAL, *PHOCA VITULINA LARGHA*. *J. Mammal.* 53(3): 594-598, 2 figs. Aug. 1972. *WR 147: 56*
[Alaska Dep. Fish & Game, Fairbanks.]

Caldwell, David K., and Melba C. Caldwell. BEAKED WHALES, *ZIPHIUS CAVIROSTRIS*, IN THE BAHAMAS. *Quart. J. Fla. Acad. Sci.* 34(2): 157-160. 1971. [From Biol. Abstr. 54(5), 1972.] *WR 147: 57*
[Univ. Fla., Gainesville.]

Coates, G. THE SEALS ON THE FARNE ISLANDS. *Field* (London) 238(6197): 913-933. Oct. 1971. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 57*

Coulson, J. C., and Grace Hickling. THE GREY SEALS OF THE FARNE ISLANDS. REPORT FOR THE PERIOD 1 APRIL 1965 TO 1 SEPTEMBER 1968. *Trans. Nat. Hist. Soc. Northumberland, Durham, Newcastle upon Tyne* 17(1, New Ser.): 29-46 + 1 pl. Nov. 1969. *WR 147: 57*
A supplementary report for the 1968 breeding season is included.

Cummings, W. C., J. F. Fish, and P. O. Thompson. BIOACOUSTICS OF MARINE MAMMALS OFF ARGENTINA: R/V HERO CRUISE 71-3. *Antarct. J. U.S.* 6(6): 266-268. Dec. 1971. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 57*

Cummings, William C., James F. Fish, and Paul O. Thompson. SOUND PRODUCTION AND OTHER BEHAVIOR OF SOUTHERN RIGHT WHALES, *EUBALENA GLACIALIS*. *Trans. San Diego Soc. Nat. Hist.* 17(1): 1-14, 6 figs. Mar. 1972. *WR 147: 57*
[Naval Undersea Res. Dev. Cent., Appl. Bioacoustics Branch, San Diego, Calif.]

Fogden, S. C. L. MOTHER-YOUNG BEHAVIOUR AT GRAY SEAL BREEDING BEACHES. *J. Zool.* 164(1): 61-92 + 1 pl. May 1971. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 57*

Gilbert, P. W., B. Irvine, and F. H. Martini. SHARK-PORPOISE BEHAVIORAL INTERACTIONS. *Bull. Ecol. Soc. Am.* 52(4): 55. Dec. 1971. [From J. Mammal. 53 (2, suppl.), 1972. Abstract only.] *WR 147: 57*

Homestead, R., B. Beck, and D. E. Sergeant. A PORTABLE, INSTANTANEOUS BRANDING DEVICE FOR PERMANENT IDENTIFICATION OF WILDLIFE. *J. Wildl. Manage.* 36(3): 947-949, 2 figs. July 1972. *WR 147: 57*
[Palo Alto, Calif.] Abstract: An explosive branding device was used to rapidly brand four species of seals. Both pups and adults were successfully marked. The brands appear to be permanent. Marked seals quickly resumed their normal behavior pattern, and no injurious effects of the marking were observed.

Hosokawa, H., and T. Kamiya. SOME OBSERVATIONS ON THE CETACEAN STOMACHS, WITH SPECIAL CONSIDERATIONS ON THE FEEDING HABITS OF WHALES. *Sci. Rep. Whales Res. Inst.* (Tokyo) 23: 91-102 + 2 pls. Sept. 1971. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 57*

Hubbs, C. L., and K. S. Norris. ORIGINAL TERMINO ABUNDANCE, SUPPOSED EXTINCTION, AND SURVIVAL OF THE JUAN FERNÁNDEZ FUR SEAL. *Antarct. Res. Ser.* 18: 35-52. 1971. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 57*

Kasuya, T. CONSIDERATION OF DISTRIBUTION AND MIGRATION OF TOOTHED WHALES OFF THE PACIFIC COAST OF JAPAN BASED UPON AERIAL SIGHTING RECORD. *Sci. Rep. Whales Res. Inst.* (Tokyo) 23: 37-60 + 6 pls. Sept. 1971. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 57*

Kasuya, T., and D. W. Rice. NOTE ON BALEEN PLATES AND ON ARRANGEMENT OF PARASITIC BARNACLES OF GRAY WHALE. *Sci. Rep. Whales Res. Inst.* (Tokyo) 22: 39-43. June 1970. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 57*

Kawamura, A. INFLUENCE OF CHASING TIME TO STOMACH CONTENTS OF BALEEN AND SPERM WHALES. *Sci. Rep. Whale Res. Inst.* (Tokyo) 23: 27-36. Sept. 1971. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 57*

Kim, Ke Chung. LOUSE POPULATIONS OF THE NORTHERN FUR SEAL *(CALLORHINUS URSINUS)*. *Am. J. Vet. Res.* 33(10): 2027-2036, 3 figs. Oct. 1972. *WR 147: 58*
[Pa. State Univ., University Park.] Infestations, density, and structure of populations, distribution, and transmission of tl, sucking lice, *Proechinophthirus fluctus* and *Antarctophthirus callorhini*, found on the northern fur seal *(Callorhinus ursinus)* were studied.--From summ.

Kozarovitskii, L. B., O. P. Petrov, and Y. D. Starodubtsev. [FORMATION OF FOOD-PROCURING REFLEXES TO CHAIN STIMULI AND SOME BEHAVIORAL CHARACTERISTICS OF DOLPHINS.] *Zh. Vyssh. Nervn. Deyat. Im. I. P. Pavlova* 21(4): 700-705. 1971. [From Biol. Abstr. 54(4), 1972. In Russian with English summ.] *WR 147: 58*
[Moscow State Univ., Moscow, USSR.]

Kuzin, A. E. [ON LORE STRUCTURE AND LUNG ASYMMETRY IN FUR SEAL EMBRYOS.] *Tikhookeansk. Nauk-Issled. Inst. Rybonogo Khozialst. Okeanogr.* (Vladivostok) 70: 238-240. 1970. [From J. Mammal. 53(2, suppl.), 1972. In Russian.] *WR 147: 58*

Kuzin, A. E. [ON WEIGHT FEATURES OF NORTHERN FUR SEAL EMBRYOS.] *Tikhookeansk. Nauk-Issled. Inst. Rybonogo Khozialst. Okeanogr. Isv.*(Vladivostok) 70: 52-59. 1970. [From J. Mammal. 53(2, suppl.), 1972. In Russian.] *WR 147: 58*

Kuzin, A. E., and A. S. Sokolov. [FEATURES OF RED BLOOD OF NORTHERN FUR SEALS *(CALLORHINUS URSINUS* L.) EMBRYOS AND NEWBORN PUPS.] *Tikhookeansk. Nauk-Issled. Inst. Rybonogo Khozialst. Okeanogr. Isv.* (Vladivostok) 70: 44-51. 1970. [From J. Mammal. 53(2, suppl.), 1972. In Russian.] *WR 147: 58*

Lluch Belda, Daniel. CRECIMIENTO Y MORTALIDAD DEL LOBO MARINO DE CALIFORNIA *(ZALOPHUS CALIFORNIANUS CALIFORNIANUS)*. [GROWTH AND MORTALITY OF THE CALIFORNIA SEA LION *(ZALOPHUS CALIFORNIANUS CALIFORNIANUS)*.] *An. Esc. Nac. Cienc. Biol. Mexico* 18(1-4): 167-189, illus. 1969 (1970). [From Biol. Abstr. 54(2), 1972. In Spanish with English summ.] *WR 147: 58*
[Inst. Politec. Nac., Mexico, Mexico.]

McDonell, Wayne. ANESTHESIA OF THE HARP SEAL. *J. Wildl. Dis.* 8(3): 287-295, 3 figs. July 1972. *WR 147: 58*
[Univ. Guelph, Guelph, Ontario, Canada.] Abstract: The harp seal *(Pagophilus groenlandicus)* was anesthetized with halothane following induction with halothan/nitrous oxide or thiopental sodium. Halothane concentrations of 0.75-1.5% were required for surgical anesthesia. The depth of anesthesia was best assessed by heart rate, muscle relaxation and the presence or absence of shivering. Controlled ventilation was required throughout anesthesia and CO_2 homeostasis was maintained by tidal volumes of 22-25 ml/kg at a rate of 10/min. There were two anesthetic deaths: one related to hypothermia, and one to a prolonged induction period.

McGinnis, Samuel M., and Thomas P. Southworth. THERMOREGULATION IN THE NORTHERN ELEPHANT SEAL, *MIROUNGA ANGUSTIROSTRIS*. *Comp. Biochem. Physiol.* 40 (4A): 893-898. 1 Dec. 1971. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 58*

Medway, W., and J. R. Geraci. SIMULATED FIELD BLOOD STUDIES IN THE BOTTLE-NOSED DOLPHIN *TURSIOPS TRUNCATUS*. 1. LEUCOCYTE DISTRIBUTION BETWEEN THE BLOOD OF CAPILLARIES AND LARGE VESSELS. *J. Wildl. Dis.* 8(3): 239-241. July 1972. *WR 147: 58*
[Univ. Pa., Philadelphia.] Abstract: To investigate possible reasons for the high percentage of eosinophilia in cetacean blood, the distribution of these cells between capillary and peripheral blood was investigated in nine bottlenosed dolphins. There were no differences in blood values which could be attributed to site selection.

Mizue, Kazuhiro, Masaharu Nishiwaki, and Akira Takemura. THE UNDERWATER SOUND OF GANGES RIVER DOLPHINS *(PLATANISTA GANGETICA)*. *Sci. Rep. Whales Res. Inst.* 23. p. 123-128, illus. 1971. [From Biol. Abstr. 54(1), 1972.] *WR 147: 58*
[Nagasaki Univ., Nagasaki, Japan.]

Morejohn, G. Victor, and Donald M. Baltz. ON THE REPRODUCTIVE TRACT OF THE FEMALE DALL PORPOISE. *J. Mammal.* 53(3): 606-608, 2 figs. Aug. 1972. *WR 147: 59*
[Moss Landing Marine Lab., Moss Landing, Calif.] *"Phocoenoides dalli."*

Nemoto, T., and K. I. Yoo. AN AMPHIPOD, *PARATHEMISTO GAUDICHAUDII* AS A FOOD OF THE ANTARCTIC SEI WHALE. *Sci. Rep. Whales Res. Inst.* (Tokyo) 22: 153-158 + 1 pl. June 1970. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 59*

Nicholls, D. G. DISPERSAL AND DISPERSION IN RELATION TO THE BIRTHSITE OF THE SOUTHERN ELEPHANT SEAL, *MIROUNGA LEONINA* (L.), OF MACQUARIE ISLAND. *Mammalia* 34 (4): 598-616. Dec. 1970. [From J. Mammal. 53(2, suppl.), 1972. In (English) with French summ.] *WR 147: 59*

Nishiwaki, M., and T. Kasuya. A GREENLAND RIGHT WHALE CAUGHT IN THE OSAKA BAY. *Sci. Rep. Whales Res. Inst.* (Tokyo) 22: 45-62 + 6 pls. June 1970. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 59*

Nishiwaki, M., and T. Kasuya. RECENT RECORD OF GRAY WHALE IN THE ADJACENT WATERS OF JAPAN AND A CONSIDERATION ON ITS MIGRATION. *Sci. Rep. Whales Res. Inst.* (Tokyo) 22: 29-38 + 4 pls. June 1970. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 59*

Nishiwaki, M., and N. Oguro. BAIRD'S BEAKED WHALES CAUGHT ON THE COAST OF JAPAN IN RECENT 10 YEARS. *Sci. Rep. Whales Res. Inst.* (Tokyo) 23: 111-122 + 2 pls. Sept. 1971. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 59*

Norris, K. S., and W. A. Watkins. UNDERWATER SOUNDS OF *ARCTOCEPHALUS PHILIPPII*, THE JUAN FERNÁNDEZ FUR SEAL. *Antarct. Res. Ser.* 18: 169-171. 1971. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 59*

Norris, W. J. T. MONK SEALS IN LIBYA. *Oryx* 11(5): 328-330, illus. May 1972. *WR 147: 59*
Sighting of Mediterranean monk seal *Monachus monachus* off Libya.

Palo, George J. NOTES ON THE NATURAL HISTORY OF THE KILLER WHALE *ORCINUS ORCA* IN WASHINGTON STATE. *Murrelet* 53(2): 22-24. May-Aug. 1972. *WR 147: 59*
[Univ. Puget Sound, Tacoma, Wash.]

Ray, G. Carleton, and Kenneth S. Norris. MANAGING MARINE ENVIRONMENTS. *Trans. N. Am. Wildl. Nat. Resour. Conf.* 37: 190-203, 1972. *WR 147: 59*
[Johns Hopkins Univ., Baltimore, Md.] Marine mammals.

Schevill, W. E., and W. A. Watkins. DIRECTIONALITY OF THE SOUND BEAM IN *LEPTONYCHOTES WEDDELLI* (MAMMALIA: PINNIPEDIA). *Antarct. Res. Ser.* 18: 163-168. 1971. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 59*

Schmidly, David J., Chester O. Martin, and George F. Collins. FIRST OCCURRENCE OF A BLACK RIGHT WHALE *(BALAENA GLACIALIS)* ALONG THE TEXAS COAST. *Southwest. Nat.* 17(2): 214-215, 1 fig. 15 Sept. 1972. *WR 147: 59*
[Tex. A&M Univ., College Station.]

Schusterman, R. J., and R. L. Gentry. DEVELOPMENT OF A FATTED MALE PHENOMENON IN CALIFORNIA SEA LIONS. *Dev. Psychobiol.* 4(4): 333-338. 1971. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 59*

Sokolov, V. E., N. V. Kokshaiski, and W. A. Rodionov. [AN EXPERIENCE IN TRANSPORTING PORPOISES AND THE STUDY OF THEIR SWIMMING IN A HYDROCANAL.] *Byull. Mosk. O-va. Ispyt. Prir. Otd. Biol.* 76(4): 37-46. 1971. [From J. Mammal. 53 (2, suppl.), 1972. In Russian with English summ.] *WR 147: 59*

Tobayama, T., S. Uchida, and M. Nishiwaki. TWIN FOETUSES FROM A BLUE WHALE DOLPHIN. *Sci. Rep. Whales Res. Inst.* (Tokyo) 22: 159-162 + 1 pl. June 1970. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 60*

Tomilin, A. G. [ON KEEPING DOLPHINS IN CAPTIVITY AND THEIR BEHAVIOR.] *Byull. Mosk. O-va. Ispyt. Prir.* 76(3): 146-157. 1971. [From J. Mammal. 53(2, suppl.), 1972. In Russian with English summ.] *WR 147: 60*

Van Bree, P. J. H. ON *GLOBICEPHALA SIEBOLDII* GRAY, 1846, AND OTHER SPECIES OF PILOT WHALES: NOTES ON CETACEA, DELPHINOIDEA: III. *Beaufortia* 19(249): 79-87, illus. 1971. [From Biol. Abstr. 54(3), 1972.] *WR 147: 60*
[Univ. Amsterdam, Amsterdam, Netherlands.]

Van Bree, P. J. H. THE RABBIT-EARED BARNACLE, *CONCHODERMA AURITUM*, ON THE TEETH OF THE DOLPHIN *STENELLA FRONTALIS*. *Z. Saeugetierkd.* 36(5): 316-317. Nov. 1971. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 60*

Young, P. C. THE RELATIONSHIP BETWEEN THE PRESENCE OF LARVAL ANISAKINE NEMATODES IN COD AND MARINE MAMMALS IN BRITISH HOME WATERS. *J. Appl. Ecol.* 9 (2): 459-485, 7 figs. Aug. 1972. *WR 147: 60*
[CSIRO, Fisheries Res. Sta., P.O. Box 5, Deception Bay, Queensland, Australia.]
"Phoca vitulina, Haliohoerus grypus, Globicephala melaena, Phocaena phocaena, Physeter catodon, Balaenoptera acutirostrata, and B. physalis."

OTHER MAMMALS

Albignac, R. UNE NOUVELLE SOUS-ESPECE DE *GALIDIA ELEGANS*: *G. ELEGANS OCCIDENTALIS* (VIVERRIDAE DE MADAGASCAR): MISE AU POINT DE LA REPARTITION GEOGRAPHIQUE DE L'ESPECE. [A NEW SUBSPECIES OF *GALIDIA ELEGANS*: *G. ELEGANS OCCIDENTALIS* (VIVERRIDAE OF MADAGASCAR): FOCUS ON THE GEOGRAPHIC DISTRIBUTION OF THE SPECIES.] *Mammalia* 35(2): 307-310. 1971. [From Biol. Abstr. 54(4), 1972. In French with English summ.] *WR 147: 60*
[Lab. Zool., Cent. Orstom. Tananarive, Tananarive, Malagasy Republic.]

Calaby, J., H. Dimpel, and I. McTaggart Cowan. THE MOUNTAIN PIGMY POSSUM, *BURRAMYS PARVUS* BROOM (MARSUPIALIA) IN THE KOSCIUSKO NATIONAL PARK, NEW SOUTH WALES [N.S.W.]. *Australia Commonw. Sci. Ind. Res. Organ. Div. Wildl. Res. Tech. Pap.* 23. p. 3-11, illus. 1971. [From Biol. Abstr. 54(5), 1972.] *WR 147: 60*
[Div. Wildl. Res., CSIRO, P.O. Box 84, Lyneham, A.C.T., Australia.]

Fleming, Theodore H. ASPECTS OF THE POPULATION DYNAMICS OF THREE SPECIES OF OPOSSUMS IN THE PANAMA CANAL ZONE. *J. Mammal.* 53(3): 619-623. Aug. 1972. *WR 147: 60*
[Univ. Mo., St. Louis.]

Harcourt, A. H., and A. F. G. Groom. GORILLA CENSUS. *Oryx* 11(5): 355-363, illus. May 1972. *WR 147: 60*
Three-month study in the Virunga volcanoes of Rwanda.

Herrmann, Doris. BEOBACHTUNGEN DES GRUPPENLEBENS OSTAUSTRALISCHER GRAUGROSSKAENGURUHS, *MACROPUS GIGANTEUS* (ZIMMERMANN, 1777) UND BENNETKAENGURUHS, *PROTEMNODON RUFOGRISKA* (DESMAREST, 1817). [OBSERVATIONS ON THE GROUP LIVING OF EAST AUSTRALIAN GREAT GRAY KANGAROO, *MACROPUS GIGANTEUS* (ZIMMERMANN, 1777) AND BENNET KANGAROO, *PROTEMNODON RUFOGRISKA* (DESMAREST, 1817).] *Saeugetierkd. Mitt.* 19(4): 352-362, illus. 1971. [From Biol. Abstr. 54(5), 1972. In German with English summ.] *WR 147: 60*
[Wenkenst. 84, Riehen, Switzerland.]

Jaimudeen, M. P., J. F. Eisenberg, and N. Tilakeratne. OESTROUS CYCLE OF THE ASIATIC ELEPHANT, *ELEPHAS MAXIMUS*, IN CAPTIVITY. *J. Reprod. Fertil.* 27(3): 321-328 + 1 pl. Dec. 1971. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 60*

Jenkins, Farish A., Jr. LIMB POSTURE AND LOCOMOTION IN THE VIRGINIA OPOSSUM *(DIDELPHIS MARSUPIALIS)* AND IN OTHER NON-CURSORIAL MAMMALS. *J. Zool.* (London) 165(3): 303-315, illus. 1971. [From Biol. Abstr. 53(10), 1972.] *WR 147: 61*
[Harvard Univ., Cambridge, Mass.]

Jungius, H. BOLIVIA AND THE VICUÑA. *Oryx* 11(5): 335-346, illus. May 1972. *WR 147: 61*
Description of the vicuña situation, some of the difficulties in protecting the vicuna, and some recommendations, including a method of enabling wild vicuña and domestic alpaca to utilize the same area.

Kaufmann, J. H., and A. B. Kaufmann. SOCIAL ORGANIZATION OF WHIPTAIL WALLABIES, *MACROPUS PARRYI*. *Bull. Ecol. Soc. Am.* 52(4): 54-55. Dec. 1971. [From J. Mammal. 53(2, suppl.), 1972. Abstract only.] *WR 147: 61*

Kingston, Newton, and Jorge Tay. *RHOPALIAS MACRACANTHUS* Y *RHOPALIAS CORNATUS* EN *DIDELPHIS MARSUPIALIS*. [*RHOPALIAS MACRACANTHUS* AND *RHOPALIAS CORNATUS* IN THE OPOSSUM *DIDELPHIS MARSUPIALIS*.] *An. Inst. Biol. Univ. Nac. Auton. Mex. Ser. Zool.* 39(1): 167-168. 1968. [From Biol. Abstr. 54(6), 1972. In Spanish with English summ.] *WR 147: 61*
[Univ. Nac. Auton. Mexico, Mexico City, Mexico.]

Linn, I. A LONGEVITY RECORD OF THE PIGMY BUSH BABY, *GALAGOIDES DEMIDOVII*. *J. Zool.* 164(2): 265-266. June 1971. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 61*

Lock, J. M. THE EFFECTS OF HIPPOPOTAMUS GRAZING ON GRASSLANDS. *J. Ecol.* 60 (2): 445-467, 13 figs. July 1972. *WR 147: 61*
[Univ. Ghana, P.O. Box 55, Legon, Ghana.] In the Queen Elizabeth National Park, western Uganda, high hippopotamus populations are associated with distinctive grassland types which appear to be zoned according to their distance from permanent water. The hippopotamus, because it grazes at night and returns to permanent water by day, has a restricted grazing range extending about 2 miles (3.2 km) from water, although individuals may move further.--From summ.

Mentis, Michael T. A REVIEW OF SOME LIFE HISTORY FEATURES OF THE LARGE HERBIVORES OF AFRICA. *Lammergeyer* no. 16. p. 1-89. June 1972. *WR 147: 61*
[Natal Parks Board, P.O. Box 662, Pietermaritzburg, Natal, South Africa.] "In this review the large herbivores indigenous to Africa are dealt with species by species according to the systematic treatment of the Smithsonian Institute's Preliminary Identification Manual for African Mammals (Ansell, 1968; and Gentry, 1968). Known information on the reproductive performances of each species is summarised."

Pence, Danny B., and M. D. Little. *ANATRICHOSOMA BUCCALIS* SP. N. (NEMATODA: TRICHOSOMOIDIDAE) FROM THE BUCCAL MUCOSA OF THE COMMON OPOSSUM, *DIDELPHIS MARSUPIALIS* L. *J. Parasitol.* 58(4): 767-773, 12 figs. Aug. 1972. *WR 147: 61*
[La. State Univ., New Orleans.] The worm is described from the mucosa of the hard palate, gums, and tongue of the common opossum, *Didelphis marsupialis*, from Louisiana, Costa Rica, and Colombia. The new species differs from other described species of the genus by its marsupial host, the unique location in the host, and certain morphological characters. The pathology and certain observations on the biology of this species are discussed.--From abstr.

Rommel, M. TRICHINOSE BEIM SCHWARZWILD IN DER PROVINZ ANKARA. [TRICHINOSIS IN WILD SWINE IN THE PROVINCE OF ANKARA.] *Ankara Univ. Vet. Fak. Derg.* 18(2): 219-221, illus. 1971. [From Biol. Abstr. 54(6), 1972. In German with Turkish summ.] *WR 147: 61*
[Freie Univ. Berlin, Koenigsweg 65 Almanya, Berlin, Germany.]

OTHER MAMMALS--Continued

Taute, C. J. A NEW SPECIES OF *PROLINOGNATHUS* (ANOPLURA: LINOGNATHIDAE) AND A RE-DESCRIPTION OF *P. LEPTOCEPHALUS* (EHRENBERG, 1828) FROM THE HYRAX. *Madoqua* (Windhoek) 1(4): 53-56. 1971. [From J. Mammal. 53(2, suppl.), 1972.] *WR 147: 62*

BIRDS--GENERAL

Bolotkinov, A., A. Shuakov, Y. Kamenskii, and V. Korolev. [BIOLOGICAL SIGNIFICANCE OF INTERRUPTED INCUBATION DURING EGG DEPOSITION IN BIRDS.] *Biol. Nauki* 13(12): 17-21. 1970. [From Bird-Banding 42(4), 1971. In Russian.] *WR 147: 62*

Gochfeld, Michael. AVIAN ABNORMALITIES AND THE SCIENTIFIC LITERATURE. *Am. Birds* 26(4): 705. Aug. 1972. *WR 147: 62*
[Am. Mus. Nat. Hist., New York, N.Y.]

Hellebrekers, W. P. J. OOLOGISCHE EN NIDOLOGISCHE MEDEDELINGEN IN 1971 (EN REREER). [COMMUNICATIONS ON BIRD NESTS AND BIRD EGGS IN 1971 (AND PREVIOUSLY).] *Limosa* 44(3/4): 196-197. 1971. [From Biol. Abstr. 54(2), 1972. In Dutch.] *WR 147: 62*
[Insulindeweg 31, Delft, Netherlands.] *"Limosa limosa, Strix aluco, Cuculus canorus, Scolopax rusticola, Motacilla alba,* and *M. flava."*

Ivanov, A. I., editor. [ORNITHOLOGICAL ARTICLES / FOR THE 100TH ANNIVERSARY OF THE ACADEMICIAN P. P. SUSHKIN.] *Akad. Nauk SSSR Trudy Zool. Inst.* 47. 264 p. 1970. Price 2 rubles 40 kopecks. In Russian. *WR 147: 62*
Contents: *Spreading of the pheasant* Phasianus colchicus *in the deserts of Central Asia*, E. V. Kozlova; *P. P. Sushkin as the faunist and zoogeographer*, L. A. Portenko; *The biological significance and evolution of cranial kinesis in birds*, K. A. Judin; *A survey of ornithological explorations in Karelia*, I. A. Neufeldt; *The nestlings of some Asian birds*, I. A. Neufeldt; *The zoological subdivisions of North-Eastern Asia based on the distribution of birds*, L. A. Portenko; *Comparative survey of the spruce grouses* (Falcipennis and Canachites, *Tetraonidae) of Asia and North America*, [illegible] L. Potapov; *Peculiarities of morphology of the wing in penguins*, B. K. Stegmann; and *On reduction of the wing musculature in the process of evolution in Aves*, B. K. Stegmann.

Massey, Helena, Małgorzata Golewska, Anatol Dangel, and Teresa Poniatowska, translators. ACTA ORNITHOLOGICA, 10(1,2,5-11), 1967. *Published for the Smithsonian Institution and the National Science Foundation, Washington, D.C., by the Foreign Scientific Publications Department of the National Center for Scientific, Technical, and Economic Information, Warsaw, Poland.* TT 70-55117. 284 p. 1972. Polish original published by Zoological Institute, Warsaw, Poland. [Translation available from U.S. Dep. Commerce, National Technical Information Service, Springfield, Va.] *WR 147: 62*
The following papers are included in this issue: *Contributions to the avifauna of Kartuzy District*, P. Kozlowski; *Breeding colonies of the bee-eater near Przemyśl*, A. Dyrcz; *Ornithological observations on the lower Bug*, A. Dyrcz and L. Tomiałojć; *Some birds observed in the Widawa River Valley*, K. Janowski; *Water birds on the Vistula near Kraków in 1962-1965*, J. M. Kozlowski; *Breeding colony of the bee-eater near Przemyśl, Prov. Rzeszów*, H. A. Kurek; *Water and marsh birds observed during a flood near Leszno, Prov. Poznań*, S. Kuśniak; *Possible record of the black-winged pratincole in Poland*, L. Tomiałojć; *Whiskered tern observed in lower Silesia*, L. Tomiałojć; *Terek sandpiper in Poland*, K. Wolk; *The first record of the Icelandic goldeneye in Poland*, K. Wolk; *The occurrence of shrikes in Podlasie*, K. Wolk; *Faunal bibliography; the twite*, Carduelis flavirostris *(L.), in Poland and adjacent territories*, L. Tomiałojć; *On the food of the red-backed shrike*, Lanius collurio *L. near Gniezno, Prov. of Poznań*, S. Mielewczyk; *Observations on the breeding biology of swallow*, Hirundo rustica *L.*, S. Kuśniak; *Comparison of postembryonal development of common tern*, Sterna hirundo *L. in natural and artificial conditions*, B. Cyborowski and B. Szulc-Olechova; *Red-breasted goose in Poland*, Z. Bogucki; *Contributions to the avifauna of Łódź*,

J. Jankowski; *On some birds observed in Niemodlin District, 1964-1965*, K. Janowski; *Birds of the northwestern part of Olkusz District*, A. Krutikow; *Penduline tit and mute swan in Distr. Leszno, Prov. Poznań*, S. Kuźniak; *Contributions to the avifauna of the Province of Lublin*, M. Luniak; *Birds of the Chodecz Territory, District Włocławek*, Cz. Nitecki; *Dusky warbler*, Phylloscopus fuscatus *(Blyth.) in Poland*, L. Tomiałojć; *Ornithological observations at the River Wołczenica Delta, District Kamień Pomorski*, K. Wolk; *III. Faunal bibliography*; *Operation Baltic 1965. Bird ringing report*, P. Busse and M. Gromadzki; and *Operation Baltic 1966. Bird ringing report*, P. Busse and M. Gromadzki.

Niethammer, G. CLUTCH SIZES OF INTRODUCED EUROPEAN PASSERIFORMES IN NEW ZEALAND. *Notornis* 17: 214-222. 1970. [From Bird-Banding 42(4), 1971.] *WR 147: 63*

Rucner, Renata, editor. LARUS / VIII / 1954. *Published for the Smithsonian Institution and the National Science Foundation, Washington, D.C., by the Nolit Publishing House, Belgrade, Yugoslavia.* TT 70-56073. 132 p. 1972. Serbo-Croatian original published by Institute of Ornithology in 1954. [Translation available from U.S. Dep. Commerce, National Technical Information Service, Springfield, Va.] *WR 147: 63*

The following papers are included in this issue: *Bird banding in 1953. 1. Results of bird banding carried out by the Ornitholigical Institute in Zagreb, 9th report; 2. Foreign recoveries in Yugoslavia, 5th report*, Renata Kroneisl-Rucner; *Birds in the Plitvička Jezera Lakes National Park, a contribution to the study of the ornithofauna of Lika (Croatia)*, Dragutin Rucner; *On the southern limit of distribution of the rook* (Corvus frugilegus *L.) on the Balkan*, István Pelle; *Data on some bird species in the district of Bačka Topola*, László Szlivka; *What we know of the migration of the red-throated pipit*, Anthus cervinus *(Pallas) through Europe*, Jakob Huber; *Winter avifauna in Carinthia*, Jakob Huber; *Ectoparasitic fauna of some birds of Croatia*, M. Žuković and T. Wikerhauser; *The beginnings of ornithology in Dalmatia*, Mladen Krpan; *The song of the honey bussard*, Pernis apivorus *(L.)*, Hans Stadler; and *Bird photographs taken during my journey in Yugoslavia*, Lothar Goetz.

Rucner, Renata, editor. LARUS / XXI-XXII / 1967-1968. *Published for the Smithsonian Institution and the National Science Foundation, Washington, D.C., by the Nolit Publishing House, Belgrade, Yugoslavia.* TT 69-51016. 187 p. 1972. Serbo-Croatian original published by Institute of Ornithology in 1967-1968. [Translation available from U.S. Dep. Commerce, National Technical Information Service, Springfield, Va.] *WR 147: 63*

The following papers are included in this issue: *Bird banding in 1966. 1. Results of the bird-banding by the Ornithological Department of the Biology Institute of Zagreb University, 18th report; 2. Foreign recoveries, 14th report*, Ljubica Štromar; *The avifauna of Lonjska Polje*, Renata Rucner; *Some data on the avifauna of the island of Lastovo*, Mladen Krpan; *The common tern*, Sterna hirundo, *a nester of the Adriatic Islands Belt*, Dragutin Rucner; *Biology of the herring gull*, Larus argentatus *(Pontopp.) and the common tern*, Sterna hirundo *(L.) and their mutual relationships on some of the Kornat Islands*, Ljubica Štromar; *Further data on the birds of the Neretva Valley*, Dragutin Rucner; *The penduline tit*, Remiz pendulinus, *in the surroundings of Zagreb*, Vladimir Pfeifer; *Observations from Rab, Autumn 1966*, I. S. Aah; *The birds of Belgrade*, Vojislav Vasić; *Some ornithological observation on Skadar (Scutari) Lake*, Bozina Ivanović; *Vacational ornithological observations on the Istrian peninsula*, Gerhard Moll; *Trophic relationships between the birds of some swamps in the plain of Sofia and other organisms of the swamp biocenosis*, Simeon Simeonov; and *The relationships between intestine and body length and the nutrition of some bird species*, Antun Cvitanić.

Arbib, Robert. ON THE ART OF ESTIMATING NUMBERS. *Am. Birds* 26(4): 706-712, illus. Aug. 1972. *WR 147: 64*

A technique for learning to correctly estimate the number of birds in a flock without counting is described. A photographic test for estimating proficiency is included.

Braun, Howard W., and Merit B. Skaggs. WARBLER CATCHING IN WATER DRIP TRAPS. *Inland Bird Banding News* 44(4): 123-132, illus. July-Aug. 1972. *WR 147: 64*

[215 53rd St., S. E. Bothe Industry, Ohio.] A multipurpose, water-drip trap is described.

Chappuis, C. APPORT DE LA BIOACOUSTIQUE EN SYSTEMATIQUE. [THE APPLICATION OF BIOACOUSTICS TO SYSTEMATICS.] *Alauda* 37: 206-218. 1969. [From Bird-Banding 42(3), 1971. In French with English summ.] *WR 147: 64*

Cooper, J. THE PROBLEM OF NEST HEIGHT RECORDING. *Bokmakierie* 22(3): 68. 1970. [From Bird-Banding 42(3), 1971.] *WR 147: 64*

Mones, Alvaro. RESTOS OSEOS DE MAMIFEROS CONTENIDOS EN REGURGITACIONES DE LECHUZA DEL ESTADO DE OAXACA, MEXICO. [MAMMALS BONES FROM OWL PELLETS FROM THE STATE OF OAXACA, MEXICO. (IDENTIFICATION).] *An. Inst. Biol. Univ. Nac. Auton. Mex. Ser. Zool.* 39(1): 169-172. 1968. [From Biol. Abstr. 54(5), 1972. In Spanish.] *WR 147: 64*

[Univ. Nac. Auton. Mexico, Mexico City, Mexico.]

Mowbray, Elmer E., and John W. Goertz. NESTING SEASON AND REPRODUCTIVE RATES OF CAVITY NESTING BIRDS OF NORTH LOUISIANA. *Southwest. Nat.* 17(2): 145-151. 15 Sept. 1972. *WR 147: 64*

[Delta Migratory Waterfowl Refuge, Venice, La.] Abstract: Data on cavity and intermediate cavity nesting species of birds of northern Louisiana were collected over seven consecutive nesting seasons extending through July, 1969. More than 1200 active nests of 28 different species of birds were observed. The number of each species represented, clutch size, brood size and related reproductive information is given. Nesting began in February and continued into August. The peak of the nesting season was late April and early May.

Swanson, George A., and W. H. Thornsberry. AVIAN FOOD HABITS ANALYSIS USING A MODIFIED COUNTER. *J. Wildl. Manage.* 36(3): 949-950, 1 fig. July 1972. *WR 147: 64*

[Northern Prairie Wildl. Res. Cent., Jamestown, N. Dak.] Abstract: A counting device designed to enumerate samples of zooplankton was modified and used to count individual food items in samples from digestive tracts of waterfowl. This equipment permitted examination under magnification of an entire sample in one revolution of a wheel and reduced the time required to enumerate individual food items within a sample.

Williams, Timothy C., Joanne Settel, Patricia O'Mahoney, and Janet M. Williams. AN ORNITHOLOGICAL RADAR. *Am. Birds* 26(3): 555-557, 3 figs. June 1972. *WR 147: 64*

[State Univ. N.Y., Buffalo.] "In summary, we find that it is possible to obtain a radar which is useful for ornithological work for a cost of less than $4000. Such a radar is limited in range, but has great resolving power for short range work. In particular it appears very useful for discriminating flocks of birds, for detecting their movements in rain or snow, or for use in remote locations beyond the range of fixed radar installations."

Zimmerman, Donald. AGE AND SEX DETERMINATION OF GAME BIRDS. *Pa. Game News* 43(11): 17-21, 9 figs. Nov. 1972. *WR 147: 64*

Age and sex characters of bobwhite quail, ringnecked pheasant, ruffed grouse, mourning dove, turkey, and woodcock are described.

Balen, J. H. Van, and A. J. Cavé. SURVIVAL AND WEIGHT LOSS OF NESTLING GREAT TITS, *PARUS MAJOR*, IN RELATION TO BROOD-SIZE AND AIR TEMPERATURE. *Netherlands J. Zool.* 20(4): 464-474. 1970. [From Bird-Banding 43(1), 1972.] *WR 147: 65*

Baziev, D. K. [MORPHOECOLOGICAL CHARACTERISTICS OF CAUCASIAN RED-BELLY REDSTART *(PHOENICURUS ERITHROGASTER ERITHROGASTER)* AND BLACKHAIRED REDSTART *(P. O. OCHRUROS).*] *Ekologiya* 1(2): 66-71, illus. 1970. [From Biol. Abstr. 54 (2), 1972. In Russian.] *WR 147: 65*
[Kabardino-Balkar. State Univ., Kabardino-Balkar, USSR.]

Berger, M., O. Z. Roy, and J. S. Hart. THE CO-ORDINATION BETWEEN RESPIRATION AND WING BEATS IN BIRDS. *Z. Vergl. Physiol.* 66: 190-200. 1970. [From Bird-Banding 42(3), 1971.] *WR 147: 65*

Bolotnikov, A., and V. Korolev. [INCUBATION TEMPERATURE IN THE HEDGE SPARROW.] *Biol. Nauki* 14(2): 11-14. 1971. [From Bird-Banding 43(1), 1972. In Russian.] *WR 147: 65*

Diehl, Barbara. PRODUCTIVITY INVESTIGATION OF TWO TYPES OF MEADOWS IN THE VISTULA VALLEY. XII. ENERGY REQUIREMENT IN NESTLING AND FLEDGLING RED-BACKED SHRIKE *(LANIUS COLLURIO* L.). *Ekol. Pol.* 19(18): 235-248, 6 figs. 1971. In English with Polish summ. *WR 147: 65*
[Inst. Ekol., Warsaw, Poland.] Abstract: Daily food consumption of the red-backed shrike averaged 56% of the mean body weight for nestlings and 50% for fledglings. Gross energy intake was 15.9 kcal/nestling/day, and 22.8 kcal/fledgling/day. Food consumption and metabolic rate were largely affected by the ambient temperature. Amount of food consumed by young birds until a month of age in the red-backed shrike population was 3.5 mg fresh weight of insects per day per m^2.

Dol'nik, T. V. [CIRCADIAN RHYTHMS OF LOCOMOTOR ACTIVITY, FEEDING AND OXYGEN CONSUMPTION IN THE CHAFFINCH *(FRINGILLA COELEBS)* DURING THE MIGRATORY PERIOD.] *Zool. Zh.* 50(12): 1835-1842, illus. 1971. [From Biol. Abstr. 54(3), 1972. In Russian with English summ.] *WR 147: 65*

Dol'nik, V. R. [BIOENERGETIC LIMITERS OF THE SIZE OF BIRDS.] *Ekologiya* 1(6): 62-69, illus. 1970. [From Biol. Abstr. 54(6), 1972. In Russian.] *WR 147: 65*
[Zool. Inst., Acad. Sci. USSR, Leningrad, USSR.] The minimal, maximal, and optimal sizes of birds were calculated by empirical formulas on the weight dependence of metabolic indices of birds. The results agreed satisfactorily with that observed in nature. This permits consideration that among the factors determining the size range and species diversity of birds, the bioenergetic factors are of considerable importance.

Dol'nik, V. R. [ENDOCRINE SYSTEM AND SEASONAL BIOLOGICAL PHENOMENA IN BIRDS.] *Usp. Sovrem. Biol.* 71(3): 412-427, illus. 1971. [From Biol. Abstr. 54(6), 1972. In Russian.] *WR 147: 65*
[Zool. Inst., Acad. Sci. USSR, Leningrad, USSR.] This is a review of studies on the role of endocrine secretion in regulation of seasonal behaviors in birds: spring development of the gonads, sexual behavior, nest construction, laying of eggs, hatching and rearing, molting, preparation for fall migration, winter life, and spring migration. Differences between settled and migratory birds and the role of photoperiodism in regulation of seasonal cycles are discussed.

Haukioja, E. FLIGHTLESSNESS IN SOME MOULTING PASSERINES IN NORTHERN EUROPE. *Ornis Fenn.* 48: 101-116. 1971. [From Ibis 114(3), 1972.] *WR 147: 65*
Studies indicate that some individuals of at least three species, *Luscinia svecica, Phylloscopus trochilus* and *Sylvia communis*, probably lose their ability to fly during part of their rapid post-nuptial molt. Because such individuals are unlikely to be caught, their numerical abundance is generally underestimated.

Jones, R. E. THE INCUBATION PATCH OF BIRDS. *Biol. Rev.* 46: 315-339. 1971. [From Ibis 114(3), 1972.] *WR 147: 66*

Klein, Helmut, Peter Berthold, and Eberhard Gwinner. VERGLEICHENDE UNTERSUCHUNG TAGESZEITLICHER AKTIVITÄTSMUSTER UND TAGESZEITLICHER KÖRPERGEWICHTSÄNDERUNGEN GEKÄFIGTER UND FREILEBENDER GRASMÜCKEN *(SYLVIA)*. [A COMPARATIVE STUDY OF DIURNAL PATTERNS OF ACTIVITY AND DIURNAL CHANGES OF BODY WEIGHT IN CAGED AND FREE-LIVING WARBLERS *(SYLVIA)*.] *Oecologia* (Berlin) 8(2): 218-222, illus. 1971. [From Biol. Abstr. 54(3), 1972. In German with English summ.] *WR 147: 66*
[Max-Planck-Inst. Verhaltensphysiol., Abt. Aschoff, Erling-Andechs, Germany.]

Rheinwald, G. GEWICHTSENTWICKLUNG NESTJUNGER MEHLSCHWALBEN *(DELICHON URBICA)* BEI VERSCHIED. WITTERUNGSBEDINGUNGEN. [WEIGHT DEVELOPMENT OF NESTLING HOUSE MARTINS *(DELICHON URBICA)* UNDER VARIOUS WEATHER CONDITIONS.] *Charadrius* 7: 1-7. 1971. [From Ibis 114(3), 1972. In German.] *WR 147: 66*
Body weights of 13 broods of house martins from hatching to fledging (two-day-intervals) are analysed.

Rijke, A. M. WETTABILITY AND PHYLOGENETIC DEVELOPMENT OF FEATHER STRUCTURE IN WATER BIRDS. *J. Exp. Biol.* 52: 469-479. 1970. [From Bird-Banding 42(3), 1971.] *WR 147: 66*

Shestakova, G. S. [STRUCTURE OF THE WINGS AND THE MECHANICS OF BIRD FLIGHT.] *Izdat. "Nauka"* (Moscow). 179 p., 67 figs. 1971. Price 63 kopecks. In Russian. *WR 147: 66*

Shtegman, B. K. [THE DEEP DIGIT FLEXOR IN THE WINGS OF BIRDS.] *Byull. Mosk. O-va. Ispyt. Prir. Otd. Biol.* 76(1): 79-88, illus. 1971. [From Biol. Abstr. 54 (5), 1972. In Russian with English summ.] *WR 147: 66*
"Opisthocomus cristatus."

Vaurie, Charles, and Paul Schwartz. MORPHOLOGY AND VOCALIZATIONS OF *SYNALLAXIS UNIRUFA* AND *SYNALLAXIS CASTANEA* (FURNARIIDAE, AVES), WITH COMMENTS ON OTHER *SYNALLAXIS*. *Am. Mus. Novit.* 2483. p. 1-13, illus. 1972. [From Biol. Abstr. 54(1), 1972.] *WR 147: 66*
[Am. Mus. Nat. Hist., New York, N.Y.]

BIRDS--BEHAVIOR

Bock, C. E. THE ECOLOGY AND BEHAVIOUR OF THE LEWIS WOODPECKER *(ASYNDESMUS LEWIS)*. *Univ. Calif. Publs. Zool.* 92: 1-91 + 6 pls. 1970. [From Ibis 114(3), 1972.] *WR 147: 66*

Boshko, S. [THE PROCESS CHARACTERISTICS OF AVIAN URBANIZATION.] *Vestn. Leningrad. Univ.* 1971(9): 5-14. [From Bird-Banding 43(1), 1972. In Russian with English summ.] *WR 147: 66*

Conrads, K., and W. Conrads. REGIONALDIALEKTE DES ORTOLANS *(EMBERIZA HORTULANA)* IN DEUTSCHLAND. [REGIONAL DIALECTS OF THE OLTOLAN *(EMBERIZA HORTULANA)* IN GERMANY.] *Vogelwelt* 92: 81-100. 1971. [From Ibis 114(3), 1972. In German with English summ.] *WR 147: 66*

Cunningham-van Someren, G. R. *EUPLECTES DIADEMATUS* FISCHER AND REICHENOW: COURTSHIP, NEST AND EGGS. *Bull. British Ornithol. Club* 91(5): 119-121. Oct. 1971. *WR 147: 66*

Diesselhorst, G. JUGENDGESANG UND ENTWICKLUNG DES GESANGS IN EINER POPULATION DER GOLDAMMER *(EMBERIZA CITRINELLA)*. [JUVENILE SONG AND THE DEVELOPMENT OF SONG IN A POPULATION OF YELLOWHAMMERS *(EMBERIZA CITRINELLA)*.] *Vogelwelt* 92: 201-226. 1971. [From Ibis 114(3), 1972.] *WR 147: 66*

Granet, P. LE PARASITISME DES CORVIDÉS PAR LE COUCOU-GEAI *(CLAMATOR GLANDARIUS)*. INTERPRÉTATION ÉTHOLOGIQUE DU DÉTERMINISME DES PHÉNOMÈNES NATURELS. [PARASITISM OF CORVIDAE BY THE GREAT SPOTTED CUCKOO *(CLAMATOR GLANDARIUS)*. ETHOLOGICAL INTERPRETATION OF DETERMINISM ON NATURAL PHENOMENA.] *Rev. Comp. Animal* 4: 17-26. 1970. [From Ibis 114(3), 1972. In French.] *WR 147: 67*

Grönlund, S., J. Itämies, and H. Mikkola. ON THE FOOD AND FEEDING HABITS OF THE GREAT GREY SHRIKE *(LANIUS EXECUBITOR)* IN FINLAND. *Ornis Fenn.* 47(4): 167-171. 1970. [From Bird-Banding 42(4), 1971.] *WR 147: 67*

Gwinner, Eberhard G., Fred W. Turek, and Susan D. Smith. EXTRAOCULAR LIGHT PERCEPTION IN PHOTOPERIODIC RESPONSES OF THE WHITE-CROWNED SPARROW *(ZONOTRICHIA LEUCOPHRYS)* AND OF THE GOLDEN-CROWNED SPARROW *(Z. ATRICAPILLA)*. *Z. Vgl. Physiol.* 75(3): 323-331, illus. 1971. [From Biol. Abstr. 54(3), 1972.] *WR 147: 67*

Harris, Margaret A., and Robert E. Lemon. SONGS OF SONG SPARROWS *(MELOSPIZA MELODIA)*: INDIVIDUAL VARIATION AND DIALECTS. *Canadian J. Zool.* 50(3): 301-309, illus. 1972. [From Biol. Abstr. 54(5), 1972. In English with French summ.] *WR 147: 67*
[McGill Univ., Montreal, Quebec, Canada.]

Hogstad, Olav. STRATIFICATION IN WINTER FEEDING OF THE GREAT SPOTTED WOODPECKER *DENDROCOPOS MAJOR* AND THE THREE-TOED WOODPECKER *PICOIDES TRIDACTYLUS*. *Ornis Scand.* 2(2): 143-146, illus. 1971. [From Biol. Abstr. 54(2), 1972.] *WR 147: 67*
[Univ. Oslo, Oslo, Norway.]

Holmes, Richard T., and Franklin W. Sturges. ECOLOGICAL STUDIES OF BIRDS AT HUBBARD BROOK. *N.H. Audubon Quart.* 25(3): 89-92. Summer 1972. *WR 147: 67*
[Dartmouth Coll., Hanover, N.H.]

Holyoak, D. M., and D. T. Holyoak. NOTES ON THE BEHAVIOUR OF AFRICAN PARROTS OF THE GENUS *POICEPHALUS*. *Avic. Mag.* 78(3): 88-95, 3 figs. May-June 1972. *WR 147: 67*
[Weybridge, Surrey, England.]

Lohrl, H. DER TANNENHÄHER *(NUCIFRAGA CARYOCATACTES)* BEIM SAMMELN UND KNACKEN VON NÜSSCHEN DER ZIRBELKIEFER *(PINUS CEMBRA)*. [ON THE NUTCRACKER'S GATHERING AND CRACKING OF NUTLETS OF THE CEMBRA PINE.] *Ans. Ornithol. Gesell. Bayern* 9(3): 185-196. 1970. [From Bird-Banding 42(4), 1971. In German with English summ.] *WR 147: 67*

McNicholl, Martin K. THE USE OF HOVERING AS A SEARCH METHOD BY THE NORTHERN SHRIKE. *Blue Jay* 30(2): 96-97. June 1972. *WR 147: 67*
[Univ. Alberta, Edmonton, Alberta, Canada.] *"Lanius excubitor."*

Nuorteva, Pekka. THE SYNANTHROPY OF BIRDS AS AN EXPRESSION OF THE ECOLOGICAL CYCLE DISORDER CAUSED BY URBANIZATION. *Ann. Zool. Fenn.* 8(4): 547-553, illus. 1971. [From Biol. Abstr. 54(1), 1972.] *WR 147: 67*
[Univ. Helsinki, Helsinki, Finland.]

Persson, Berith. HABITAT SELECTION AND NESTING OF A SOUTH SWEDISH WHITE-THROAT *SYLVIA COMMUNIS*. *Ornis Scand.* 2(2): 119-126, illus. 1971. [From Biol. Abstr. 54(2), 1972.] *WR 147: 67*
[Univ. Lund, Lund, Sweden.]

Ponomareva, T. S. [ROLE OF ENVIRONMENTAL FACTORS AND NEST PROPERTIES IN INCUBATING BIRDS BEHAVIOR.] *Zool. Zh.* 50(11): 1709-1719, illus. 1971. [From Biol. Abstr. 54(5), 1972. In Russian with English summ.] *WR 147: 67*
The nesting behavior of some desert and semidesert birds was studied during three spring-summer seasons. On the basis of cooling and heating coefficients and some details of nesting behavior, one can predict, to a certain extent, the rhythm of the incubation under similar climatic conditions.

Slater, P. J. B., and E. P. Slater. BEHAVIOUR OF THE TYSTIE DURING FEEDING OF THE YOUNG. *Bird Study* 19(2): 105-113, 1 fig. + 1 pl. June 1972. *WR 147: 68*
[Univ. Sussex, Brighton, England.] *"Cepphus grylle."*

Smith, Susan M. THE ONTOGENY OF IMPALING BEHAVIOUR IN THE LOGGERHEAD SHRIKE, *LANIUS LUDOVICIANUS* L. *Behaviour* 42(3-4): 232-246, 1 fig. 1972. In English with French summ. *WR 147: 68*
[Wellesley Coll., Wellesley, Mass.]

Vellenga, R. E. BEHAVIOUR OF THE MALE SATIN BOWER-BIRD AT THE BOWER. *Australian Bird Bander* 8(1): 3-11 + color photo. 1970. [From Bird-Banding 42(3), 1971.] *WR 147: 68*
"Ptilonorhynchus violaceus."

Von Helversen, Dagmar, and Wolfgang Wickler. UEBER DEN DUETTGESANG DES AFRIKANISCHEN DRONGO *DICRURUS ADSIMILIS* BECHSTEIN. [THE DUET OF THE AFRICAN DRONGO, *DICRURUS ADSIMILIS*.] *Z. Tierpsychol.* 29(3): 310-321, illus. 1971. [From Biol. Abstr. 54(5), 1972. In German with English summ.] *WR 147: 68*
[Max-Planck-Inst. Verhaltenphysiol., Seewiesen, Germany.] There are always two birds duetting, probably the partners of a pair. It is unknown which part is sung by the male and which by the female. A duet series usually lasts about 4-5 min. and consists of several duets, each lasting a few seconds. A single duet consists of approximately 20 elements.

Wilson, Mary F. BEHAVIORAL DOMINANCE AND ECOLOGICAL SEGREGATION IN SPARROWS. *Passenger Pigeon* 34(2): 58-61. Summer 1972. *WR 147: 68*
[Univ. Ill., Urbana.]

BIRDS--MIGRATION & BANDING REPORTS

Anderson, David R. BIBLIOGRAPHY ON METHODS OF ANALYZING BIRD BANDING DATA / WITH SPECIAL REFERENCE TO THE ESTIMATION OF POPULATION SIZE AND SURVIVAL. *U.S. Fish Wildl. Serv. Spec. Sci. Rep. Wildl.* no. 156. ii + 13 p. 1972. *WR 147: 68*
[Patuxent Wildl. Res. Cent., Laurel, Md.]

Asbirk, Sten. DANSKE SCALERS TRAEKFORHOLD. [THE MIGRATORY BEHAVIOR OF DANISH MARTINS.] *Flora Fauna* 77(4): 119-121, illus. 1971. [From Biol. Abstr. 54(5), 1972. In Danish with English summ.] *WR 147: 68*
[Forvalterboligen, Sct. Hans Hosp., Roskilde, Denmark.] *"Riparia riparia."*

Bruderer, B. ZUR REGISTRIERUNG UND INTERPRETATION VAN ECHOSIGNATUREN AN EINEM 3-CM-ZIELFOLGUMGSRADAR. [RECORDING AND INTERPRETATION OF ECHO SIGNATURES WITH A 3-CM TRACKING RADAR.] *Ornithol. Beob.* 66(3): 70-88. 1969. [From Bird-Banding 42(3), 1971. In German with English summ.] *WR 147: 68*

Bruderer, B., and J. Joss. METHODEN UND PROBLEME DER BESTIMMUNG VON RADAR-QUERSCHNITTEN FREI FLIEGENDER VOGEL. [METHODS AND PROBLEMS OF DETERMINING RADAR CROSS-SECTIONS OF FREE-FLYING BIRDS.] *Rev. Suisse Biol.* 76: 1106-1118. 1969. [From Bird-Banding 42(3), 1971. In German with French and English summ.] *WR 147: 68*

Carins, M. BANDING SYSTEM AND TECHNIQUE IN THE FIELD. *Australian Bird Bander* 8(4): 85-86. 1970. [From Bird-Banding 42(3), 1971.] *WR 147: 68*
Notes on equipment and methods for a permanent banding station.

Carins, M. STANDARDS FOR BANDERS. *Australian Bird Bander* 8(3): 59-60. 1970. [From Bird-Banding 42(3), 1971.] *WR 147: 68*
Mainly how to measure birds to conform to techniques used in Britain and the U.S.

Cornwallis, L., and D. Ferguson. A REVIEW OF BIRD RINGING IN IRAN THROUGH 1969. *Tehran: Iran Game & Fish Dep.* 49 p. 1971. [From Ibis 114(3), 1972.] *WR 147: 69*

Danilov, V., G. Demirochaglyan, Z. Avetisyan, M. Aelakhuyerdyan, S. Grigoryan, and G. Saribekhyan. [POSSIBLE MECHANISMS OF MAGNETIC SENSITIVITY IN BIRDS.] *Biol. Zh. Armenia* 23(8): 26-34. 1970. [From Bird-Banding 43(1), 1972. In Russian.] *WR 147: 69*

Dolnik, V. [COMPARATIVE ENERGY EXPENDITURE IN MIGRATION AND WINTERING OF BIRDS.] *Ekologiya* 2(3): 88-89. 1971. [From Bird-Banding 43(1), 1972. In Russian.] *WR 147: 69*

In comparing energy economy of migrating Courish Spit chaffinches *(Fringilla coelebs)* with those of Finland, it is calculated that for the former it is 1.9 kcal/day for 131 days; and for the latter, 2.5 per day for 140 days; consequently energy expenditure for the Courish, for 3500 km travel, is 250 kcal, and for the Finnish, in 5000 km travel, it totals 350 kcal. It is concluded per the above figures and other reasons that migration to and from and sojourn in a warmer climate for the winter involves about the same energy expenditure as if the birds remained home through the winter.

Fog, Jørgen. BIRD-MARKING BY THE GAME BIOLOGY STATION 1950-70. *Dansk Ornithol. Foren. Tidsskr.* 65. p. 129-132. 1971. In English with Danish summ. *WR 147: 69*

[Game Biol. Sta., Kalø, Rønde, Denmark.]

Fredga, Karl, and Ingemar Frycklund. RINGMÄRKNINGSVERKSAMHETEN VID LEDSKÄRS FÅGELSTATION 1957-1963. [THE RINGING ACTIVITY AT THE LEDSKÄR BIRD STATION 1957-1963.] *Vår Fågelvärld* 24(3): 193-217, 9 figs. 1965. In Swedish with English summ. *WR 147: 69*

Holgersen, H. [RINGING AND MIGRATION OF NORWEGIAN *TURDUS TORQUATUS*.] *Stavanger Mus. Årbok* 1970: 111-116. 1970. [From Ibis 114(3), 1972. In Norwegian with English summ.] *WR 147: 69*

Leberman, Robert C., and Mary Heimerdinger Clench. BIRD-BANDING AT POWDERMILL, 1971 AND TEN YEARS REVIEWED. *Powdermill Nature Reserve, Res. Rep.* no. 30. 42 p. July 1972. *WR 147: 69*

A summarization of the 92,573 birds of 155 spp. banded during 1959-71.

Louette, M. DIFFERENCE D'INTENSITE DE MIGRATION ENTRE LA ZONE COTIERE BELGE ET L'INTERIEUR DU PAYS, VUE PAR RADAR. [THE DIFFERENCE IN MIGRATION INTENSITY BETWEEN THE BELGIAN COASTAL AREA AND THE INTERIOR OF THE COUNTRY AS SEEN BY RADAR.] *Aves* 8(2): 41-55, illus. 1971. [From Biol. Abstr. 54(3), 1972. In French with English and Dutch summ.] *WR 147: 69*

[Cent. Rech. Biol. For., Bokrijk, Genk, Belgium.]

Österlöf, Sten. ANNUAL REPORT FOR 1961 OF THE SWEDISH BIRD-RINGING OFFICE. *Vår Fågelvärld* 24(4): 335-400, 1 fig. 1965. In English and Swedish. *WR 147: 69*

Österlöf, Sten. [KUNGFÅGELNS *(REGULUS REGULUS)* FLYTTNING. [THE MIGRATION OF THE GOLDCREST *(REGULUS REGULUS).*] *Vår Fågelvärld* 25(1): 49-56, 4 figs. 1966. In Swedish with English summ. *WR 147: 69*

Payevsky, V. A., et al. [ECOLOGICAL AND PHYSIOLOGICAL ASPECTS OF MIGRATORY BIRDS.] *Akad. Nauk SSSR, Trudy Zool. Inst.* 50. 244 p., illus. 1971. Price 2 rubles, 16 kopecks. In Russian. *WR 147: 69*

Atlas of bird migrations according to ringing data at the Kurische Nehrung, A. Payevsky; *The development of the autumnal migratory state in some wild passerine birds: bioenergetic aspect*, T. I. Blumenthal; *Some peculiarities of swallow's biology during migration*, D. S. Lyuleeva; *Caloric density of body weight variations in chaffinch* (Fringilla coelebs), V. R. Dolnik and V. M. Gavrilov; and *The energy metabolism at flight in some passerine birds*, V. R. Dolnik and V. M. Gavrilov.

Prigogine, A. THE SEASONAL MIGRATIONS OF THE COMMON BLACK CUCKOO-SHRIKE *CAMPEPHAGA FLAVA* VIEILLOT. *Bull. British Ornithol. Club* 92(3,4): 83-90. June-Aug. 1972. *WR 147: 70*

Robertson, C. J. R. PRELIMINARY REPORT ON BIRD BANDING IN NEW ZEALAND 1964-1971. *New Zealand Dep. Internal Affairs Wildl. Publ.* no. 141. 13 p. 1972. [Reprinted from Notornis 19(1): 61-73. Mar. 1972.] *WR 147: 70*
[Wildl. Serv., Dep. Internal Affairs, Wellington, New Zealand.]

Stopper, Hugo. NORDISCHE KLEINVÖGEL ALS WINTERGÄSTE IM NECKARTAL ZWISCHEN ROTTENBURG UND TÜBINGEN (WÜRTTEMBERG). [NORTHERN SMALL BIRDS AS WINTER VISITORS TO NECTARTAL BETWEEN ROTTENBURG AND TÜBINGEN (WÜRTTEMBERG).] *Ornithol. Mitt.* 24(6): 114-116, 1 fig. June 1972. In German. *WR 147: 70*
[Siedlung 256, Kiebingin, Germany.]

Tanner, A. MICROWAVES AND BIRDS IN FLIGHT; SCIENTISTS TUNE IN ON WAVE-LENGTHS OF BIRDS. *Sci. Dimension* 3(3): 18-21. 1971. [From Bird-Banding 43(1), 1972. In English and French.] *WR 147: 70*

Wiltschko, Wolfgang, Hiltrud Hoeck, and Friedrich W. Merkel. OUTDOOR EXPERIMENTS WITH MIGRATING EUROPEAN ROBINS IN ARTIFICIAL MAGNETIC FIELDS. *Z. Tierpsychol.* 29(4): 409-415, illus. 1971. [From Biol. Abstr. 54(2), 1972. In English with German summ.] *WR 147: 70*
[Univ. Siesmayerst. 70, Frankfurt/Main, Germany.]

BIRDS--MANUALS, FAUNAS, COMMUNITIES

Abdulali, H. A CATALOGUE OF THE BIRDS IN THE COLLECTION OF THE BOMBAY NATURAL HISTORY SOCIETY — 6, 7, & 8. *J. Bombay Nat. Hist. Soc.* 67: 51-56, 279-298; 68: 127-152. 1970 & 1971. [From Ibis 114(3), 1972.] *WR 147: 70*

Abdulali, Humayun. A CATALOGUE OF THE BIRDS IN THE COLLECTION OF THE BOMBAY NATURAL HISTORY SOCIETY: 9. *J. Bombay Nat. Hist. Soc.* 68(2): 228-238. 1971. [From Biol. Abstr. 54(4), 1972.] *WR 147: 70*
[Bombay Nat. Hist. Soc., Bombay, Maharashtra, India.] This part deals with 236 specimens of 23 spp. and sspp.

Abdusalyamov, I. A. [FAUNA OF TADZHIK USSR. VOL. 19. PART 2. BIRDS.] *Akad. Nauk Tadzhik. SSR* (Dushanbe). 403 p., 122 figs. + 21 pls. 1971. Price 3 rubles. In Russian. *WR 147: 70*

Antal, Laszlo, Janos Fernbach, Jozsef Mikuska, Istvan Pelle, and Laszlo Szlivka. NAMENVERZEICHNIS DER VOEGEL DER AUTONOMEN PROVINZ VOJVODINA (MIT EINER HISTORISCHEN UEBERSICHT VON DR. ANDRAS KEVE). [LIST OF THE BIRDS OF THE AUTONOMOUS PROVINCE VOIVODINA (WITH A HISTORICAL SURVEY BY DR. ANDRAS KEVE).] *Larus* 23: 73-127, illus. 1969 (1971). [From Biol. Abstr. 54(6), 1972. In German with Serbo-Croatian summ.] *WR 147: 70*
[21217 Backo Gradiste, Yugoslavia.] Abstract: A total of 295 bird spp. and numerous subspecies which occur in Voivodina are listed. An additional 16 spp. which were only observed but not verified are also listed. The history of ornithological research in this area is briefly discussed.

Averin, Yu. V., I. M. Ganya, and G. A. Uspenskii. [BIRDS OF MOLDAVIA. VOLUME II.] *Akad. Nauk Moldavskoi SSR, Inst. Zool.* 236 p., 71 figs. 1971. Price 1 ruble, 72 kopecks. In Russian. *WR 147: 70*

Bárta, Zdeněk, Vladimír Bejček, and Pavel Tyrner. INICIÁLNÍ PTAČÍ SYNUSIE Z ROSTLINNÉ ASSOCIACE *ATRIPLICETUM NITENSIS* KNAPP, 1945 NA HNĚDOUHELNÉ VÝSYPCE R. 1970. [INITIAL AVIAN SYNUSIA IN THE PLANT COMMUNITY *ATRIPLEX NITENSIS* KNAPP, 1945, FOUND ON BROWNCOAL WASTE DUMP IN 1970.] *Biologia* (Bratislava) 26(11): 835-840, illus. 1971. [From Biol. Abstr. 54(2), 1972. In Czech with English summ.] *WR 147: 70*

Bennett, Esther V. NEBRASKA NESTING SURVEY. *Nebr. Bird Rev.* 40(1): 9-15. Mar. 1972. *WR 147: 71*
Reports on 81 spp. from 25 counties.

Birkenmajer, Krzysztof. ORNITHOLOGICAL OBSERVATIONS FROM TORELL LAND, SPITSBERGEN, IN 1970. *Nor. Polarinst. Arbok* 1970: 298-301, illus. 1972. [From Biol. Abstr. 54(5), 1972.] *WR 147: 71*
[Polish Acad. Sci., Cracov, Poland.]

Bogorodskii, Y. V. [INFORMATION ON THE ORNITHOFAUNA OF THE FLOODPLAIN OF THE CHIKOI RIVER IN SOUTHWESTERN ZABAIKAL.] *Isv. Irkutsk. S-kh. Inst.* 26(3): 121-129. 1970. [From Biol. Abstr. 54(6), 1972, from Ref. Zh. Biol., 1971, no. 71398. In Russian.] *WR 147: 71*
Of 118 spp. observed 46 were nesting and for five nesting was probable. Thirteen species frequented the floodplain as a hunting and feeding ground. Nine species flew through: eight were seen only during the spring flight.

Burleigh, Thomas D. BIRDS OF IDAHO. *The Caxton Printers, Ltd.* (Caldwell, Idaho). xiii + 467 p., illus. + 12 pls., 7.25 x 10.25 in. 1972. Price $17.50 *WR 147: 71*
This volume brings together detailed information on the birds of the state, their identify, variations, distribution, movements, and habits. It also includes the results of a detailed study of the birdlife of Idaho carried on by the U.S. Fish and Wildlife Service over a period of 11 years. A list of birds described from Idaho and a bibliography of articles dealing with the birdlife of the state are also included.

Campbell, R. Wayne. THE SUMMER BIRDS OF RICHTER PASS, BRITISH COLUMBIA. *Syesis* 4(1/2): 185-189, illus. 1971. [From Biol. Abstr. 54(4), 1972.] *WR 147: 71*
[Univ. British Columbia, Vancouver, British Columbia, Canada.] During 13 summers of field work, beginning in 1955, more than 600 nests of 91 spp. were located.

Clancy, P. A. A HANDLIST OF THE BIRDS OF SOUTHERN MOCAMBIQUE. PART II (PASSERIFORMES). *Mem. Inst. Invest. Cient. Mocambique Ser. A (Ciens. Biol.)* 11: 1-167, illus. + 21 figs. 1971. *WR 147: 71*
[Durban Mus., Durban, South Africa.]

De Korte, J. BIRDS, OBSERVED AND COLLECTED BY "DE NEDERLANDSE SPITSBERGEN EXPEDITIE" IN WEST AND EAST SPITZBERGEN, 1967 AND 1968-'69: I. *Beaufortia* 19 (253): 113-150, illus. 1972. [From Biol. Abstr. 54(4), 1972.] *WR 147: 71*
[Univ. Amsterdam, Amsterdam, Netherlands.]

De Masramon, Dora Ochoa. CONTRIBUCION AL ESTUDIO DE LAS AVES DE SAN LUIS: FAMILIA FURNARIIDAE. [CONTRIBUTION TO THE STUDY OF THE BIRDS OF SAN LUIS: FURNARIIDAE FAMILY.] *Hornero* 11(2): 113-123. 1971. [From Biol. Abstr. 54(4), 1972. In Spanish.] *WR 147: 71*
[Asoc. Ornitol. Plata, Buenos Aires, Argentina.]

Dorst, J. CONTRIBUTION À L'ÉTUDE DES OISEAUX DE L'ÎLE M'BAMOU (CONGO BRAZZAVILLE). [CONTRIBUTION TO THE STUDY OF BIRDS OF THE M'BAMOU ISLAND (CONGO BRAZZAVILLE).] *Oiseau* (Paris) 41: 41-62. 1971. [From Ibis 114(3), 1972. In French.] *WR 147: 71*
Annotated list of 105 spp. of birds found on this Congo River island.

Elliott, C. C. H. AN ORNITHOLOGICAL SURVEY OF THE KIDEPO NATIONAL PARK, NORTHERN UGANDA. *J. East Africa Nat. Hist. Soc. Natl. Mus.* 28(129). 31 p., illus. 25 Jan. 1972. *WR 147: 71*
[Percy FitzPatrick Inst. African Ornithol., Univ. Cape Town, Cape Town, South Africa.] Results of an ornithological survey of the Kidepo National Park are recorded. The bird-plant communities of five principal types of lowland savannah, of two areas of upland forest and savannah, and of the riverine areas within the Park are described.

Frete, P. COMPLÉMENT À L'ÉTUDE DE L'AVIFAUNE DE DAYA SIDI BOU RHABA. [COMPLEMENT TO THE STUDY OF THE BIRD FAUNA OF LAKE SIDI BOU RHABA.] *Bull. Soc. Sci. Nat. Phys. Maroc* 50(1/2): 59-66, illus. 1970. [From Biol. Abstr. 54(6), 1972. In French.] *WR 147: 72*
[Lycee Descartes M.U.C.P., Rabat, Morocco.]

Gavrilov, E. I., chief editor. [ORNITHOLOGICAL NEWS OF KAZAKHSTAN.] *Akad. Nauk Kaz. SSR, Trudy Inst. Zool.* 29. 223 p., illus. 1968. Price 1 ruble, 52 kopecks. In Russian with English summ. *WR 147: 72*

Graber, Richard R., Jean W. Graber, and Ethelyn L. Kirk. ILLINOIS BIRDS: HIRUNDINIDAE. *Ill. Nat. Hist. Surv. Biol. Notes* no. 80. 36 p., 30 figs. Aug. 1972. *WR 147: 72*

Hickling, Grace. ORNITHOLOGICAL REPORT FOR THE FARNE ISLANDS FOR 1968. *Trans. Nat. Hist. Soc. Northumberland, Durham, Newcastle Upon Tyne* 17(2, New Ser.): 113-125. Mar. 1970. *WR 147: 72*

Hickling, Grace. ORNITHOLOGICAL REPORT FOR THE FARNE ISLANDS FOR 1969. *Trans. Nat. Hist. Soc. Northumberland, Durham, Newcastle Upon Tyne* 17(4, New Ser.): 163-176. Oct. 1971. *WR 147: 72*

Horton, D. R. SPECIATION OF BIRDS IN AUSTRALIA, NEW GUINEA AND THE SOUTH-WESTERN PACIFIC ISLANDS. *Emu* 72(3): 91-109, 8 figs. July 1972. *WR 147: 72*
[Univ. New England, Armidale, New South Wales, Australia.] The bird faunas of Australia, New Guinea and the south-western Pacific islands were graphically analysed in terms of distribution and ratios of species per genus. Models were then constructed that matched the real data closely. The form of these models gives rise to the following hypothesis about the course of evolution in the three areas. Many more species have adapted themselves to life in rainforest in New Guinea and the south-western Pacific islands than in Australia. The difference appears to be because in Australia the amount of rainforest habitat is low, the rainforest habitat does not readily enable isolates to form, and many of the genera entering Australia do not have rainforest species and never invade the rainforest habitat.--From summ.

Hymayun, Abdulali. NARCONDAM ISLAND AND NOTES ON SOME BIRDS FROM THE ANDAMAN ISLANDS. *J. Bombay Nat. Hist. Soc.* 68(2): 385-411, illus. 1971. [From Biol. Abstr. 54(4), 1972.] *WR 147: 72*
[Bombay Nat. Mus. Soc., Bombay, Maharashtra, India.]

Jepsen, P. Uhd. YNGLEFGLE VED HJARBAEK FJORD. [BREEDING BIRDS AT HJARBAEK FJORD.] *Flora Fauna* 77(4): 93-105, 6 figs. 1971. In Danish with English summ. *WR 147: 72*
Observations on species distribution and the number of breeding birds that have been recorded during 1968, 1969, and 1970 are discussed.--From summ.

Johnston, David W., Charles H. Blake, and Donald W. Buden. AVIFAUNA OF THE CAYMAN ISLANDS. *Quart. J. Fla. Acad. Sci.* 34(2): 141-156, illus. 1971. [From Biol. Abstr. 54(5), 1972.] *WR 147: 72*
[Univ. Fla., Gainesville.] In this current list of the birds on the three Cayman Islands, the distribution of 151 spp. of which at least 42 currently breed is discussed.

Jones, Gwilym S. AVIFAUNA OF A STUDY AREA IN THE STRIP-MINED REGION OF INDIANA. *Ind. Audubon Quart.* 46(4): 92-97. 1968. *WR 147: 72*

Kemp, A. C., and M. I. Kemp. THE BIRDS OF VALENCIA RANCH, SOUTH WEST AFRICA. *South African Avifauna Ser. Percy FitzPatrick Inst. African Ornithol. Univ. Cape Town* no. 82. 15 p. 1972. Price 20¢. *WR 147: 72*
[Transvaal Mus., Pretoria, South Africa.] An annotated list of approximately 136 spp.

Koehler, Karl-Heinz. DIE VOGELWELT EINES MISCHWALDES BEI VEERSSEN (KREIS UELZEN) IM WINTER UND SOMMER. [THE BIRDS OF A MIXED FOREST NEAR VEERSSEN (UELZEN AREA) IN WINTER AND SUMMER.] *Angew. Ornithol.* 3(4): 154-163. 1970/1971. [From Biol. Abstr. 54(2), 1972. In German with English summ.] *WR 147: 73*
[Parkst. 11, Veerssen, Germany.]

Marinkelle, Cornelis J. BIRDS OF THE SERRANIA DE MACUIRA, GUAJIRA PENINSULA, COLOMBIA. *Mitt. Inst. Colombo-Aleman Invest. Cient. Punta De Betin* 4. p. 15-34. 1970. [From Biol. Abstr. 54(2), 1972. In English with German and Spanish summ.] *WR 147: 73*
[Univ. Andes, Apartado Aero, Bogota, Colombia.] *"Dendroica townsendi."*

Marshall, J. T., Jr., and S. Pantuwattana. IDENTIFICATION OF LEAF WARBLERS IN THAILAND. *Nat. Hist. Bull. Siam. Soc.* 23: 1-8 + 1 pl. 1969. [From Ibis 114 (3), 1972.] *WR 147: 73*
A guide to the identification of the 16 spp. of *Phylloscopus* in Thailand, giving characters for use with the bird in the hand. A field key is presented.

Mayr, E., and W. H. Phelps, Jr. ORIGEN DE LA AVIFAUNA DE LAS ALTIPLANICIES DEL SUR DE VENEZUELA. [THE ORIGIN OF THE AVIFAUNA OF THE SOUTHERN VENEZUELAN HIGHLANDS.] *Bol. Soc. Venez. Cienc. Nat.* 29: 309-401. 1971. [From Ibis 114(3), 1972. In Spanish.] *WR 147: 73*
A direct and complete translation of the authors' 1967 papers. The origin of the bird fauna of south Venezuelan highlands.

Mitsch, Hansjoachim. URWALDVÖGEL, NATUR- UND UMWELTSCHUTZ, VERHALTENSFORSCHUNG. [TROPICAL FOREST BIRDS, NATURE AND ENVIRONMENTAL PROTECTION AND BEHAVIORAL RESEARCH.] *Ornithol. Mitt.* 24(6): 125-130. June 1972. In German. *WR 147: 73*
[Gollanczstrasse 35, Berlin, Germany.]

Moskvitin, S. S. [DISTRIBUTION OF SOME BIRDS IN THE SOUTHEASTERN PORTION OF WESTERN SIBERIA.] *Trudy Nauchno-Issled. Inst. Biol. Biofiz. Tomsk Univ.* 1: 30-32. 1970. [From Biol. Abstr. 54(6), 1972, from Ref. Zh. Biol., 1971, no. 71396. In Russian.] *WR 147: 73*
New data on the distribution of 13 spp. is given from investigations in Aug.-Sept. 1964 around the middle course of the Chulyma River, Tomsk Oblast, USSR.

Pailer, Klaus, and Gunther Schnebel. DER WINTERVOGELBESTAND EINER FELDLANDSCHAFT DER LUENEBURGER HEIDE. [THE WINTER BIRD STAND OF A FIELD OF THE LUNEBERGER HEIDE.] *Angew. Ornithol.* 3(4): 164-166. 1970/1971. [From Biol. Abstr. 54(2), 1972. In German.] *WR 147: 73*
[Birkenst. 13, Uelzen, Germany.] A total of 22 bird spp. were determined in the winter (1970/1971) in a field of the Luneberger Heide (Germany). Comparisons with an equal area of park showed that due to its changing biotope a park is capable of maintaining more birds.

Parrack, J. D., and D. G. Bell. ORNITHOLOGICAL REPORT FOR NORTHUMBERLAND AND DURHAM FOR 1968. *Trans. Nat. Hist. Soc. Northumberland, Durham, Newcastle Upon Tyne* 17(2, New Ser.): 79-112 + 1 pl. Mar. 1970. *WR 147: 73*

Prigogine, A. LES OISEAUX DE L'ITOMBWE ET DE SON HINTERLAND. [THE BIRDS OF ITOMBWE AND ITS HINTERLAND.] *Ann. Mus. Roy. African Cent. Ser. 8 Sci. Zool.* no. 185. 298 p. 1971. [From Ibis 114(3), 1972. In French.] *WR 147: 73*
This volume comprises short historical notes and a complete systematic list of the 551 species known from the Itombwe region of Zaire.

Renkoff, Martin. BEMERKENSWERTE BEOBACHTUNGEN 1971 IM BALIK-GÖLÜ-GEBIET (NORDTÜRKEI). [NOTEWORTHY 1971 OBSERVATIONS IN BALIK-GÖLÜ REGION OF NORTHERN TURKEY.] *Ornithol. Mitt.* 24(4): 63-73, illus. Apr. 1972. In German. *WR 147: 73*
[Heesweg 1, Wassenberg, Germany.] Observations on 91 spp. of birds.

Richards, Tudor. INLAND WATER BIRDS IN NEW HAMPSHIRE, PART II. *N.H. Audubon Quart.* 25(3): 83-88. Summer 1972. *WR 147: 74*

Sanger, Gerald A. CHECKLIST OF BIRD OBSERVATIONS FROM THE EASTERN NORTH PACIFIC OCEAN, 1955-1967. *Murrelet* 53(2): 15-21, 1 fig. May-Aug. 1972. *WR 147: 74*
[Natl. Marine Fish. Serv., 2725 Montlake Blvd. E., Seattle, Wash.]

Sinfield, Brian C. RARE BIRDS OF THE SEYCHELLES. *Avic. Mag.* 78(3): 101-105, 1 pl. May-June 1972. *WR 147: 74*

Vernon, C. J. THE BIRDS OF PIETERMARITZBURG, NATAL. *South African Avifauna Ser. Percy FitzPatrick Inst. African Ornithol. Univ. Cape Town* no. 83. 61 p. + 1 fig. 1972. Price $1.00. *WR 147: 74*
Contains an annotated list of over 200 spp. found in the area and describes the preferred habitats of some of the species mentioned.

Williamson, K. THE BREEDING BIRDS OF A CENTURY-OLD GROVE OF COAST AND SIERRA REDWOODS IN WALES. *Quart. J. For.* 65: 109-121. 1971. [From Ibis 114(3), 1972.] *WR 147: 74*

Winterbottom, J. M. THE AVIFAUNAS OF THE ARID DISTRICTS OF AFRICA. *Rev. Zool. Bot. Afr.* 85(1-2): 131-141. 31 Mar. 1972. *WR 147: 74*
[Percy FitzPatrick Inst. African Ornithol., Cape Town, South Africa.]

Wylie, William L. THE INFLUENCE OF A VIRGIN STAND OF HEMLOCK ON THE BREEDING BIRDS OF A CENTRAL APPALACHIAN MIXED HARDWOOD FOREST. *M.S. thesis, W. Va. Univ.* 52 p. 1971. *WR 147: 74*
A singing male census was carried out on 5 census lines in 1969. Bird species diversity and foliage height diversity were calculated for the hemlock and surrounding areas. The relationship of the 26 species of breeding birds to the hemlock track is discussed.--Courtesy/ David E. Samuel.

Zuberhueler, Emilio A. OBSERVACIONES SOBRE LAS AVES DE LA PROVINCIA DE BUENOS AIRES. [OBSERVATIONS ON THE BIRDS OF THE PROVINCE OF BUENOS AIRES.] *Hornero* 11(2): 98-112, illus. 1971. [From Biol. Abstr. 54(4), 1972. In Spanish.] *WR 147: 74*
[Asoc. Ornitol. Plata, Buenos Aires, Argentina.]

BIRDS--POPULATIONS & FLUCTUATIONS

Berthold, P., E. Gwinner, and H. Klein. CIRCANNUALE PERIODIK BEI GRASMÜCKEN *(SYLVIA).* [CIRCUMANNUAL PERIODICITY IN WARBLERS *(SYLVIA).*] *Experientia* 27: 399. 1971. [From Bird-Banding 43(1), 1972. In German with English summ.] *WR 147: 74*

Bock, Carl E., and Larry W. Lepthien. WINTER ERUPTIONS OF RED-BREASTED NUTHATCHES IN NORTH AMERICA, 1950-1970. *Am. Birds* 26(3): 558-561, 2 figs. June 1972. *WR 147: 74*
[Univ. Colo., Boulder.] "Insofar as the past 21 years are concerned, red-breasted nuthatches have been coming south into the central and southern United States on a regular schedule of alternate, or in two cases paired, years of non-eruption followed by invasion."

Falk, Lloyd L. CHRISTMAS BIRD COUNTS OF DELAWARE. *Delmarva Ornithol.* 7(2): 30-37. July 1972. *WR 147: 74*
Some observations on Christmas bird counts made during 1900-1971.

Lens, M. ZUM PROBLEM DER ERFASSUNG VON BRUTVOGELBESTÄNDEN IN STADTBIOTOPEN. [ON THE PROBLEM OF RECORDING THE BREEDING BIRD STATUS IN URBAN BIOTOPES.] *Vogelwelt* 92: 41-52. 1971. [From Ibis 114(3), 1972. In German with English summ.] *WR 147: 74*

BIRDS--POPULATIONS & FLUCTUATIONS--Continued

Markiewicz, Józef. ZMIANY W AWIFAUNIE PÓŁNOCNEJ CZĘŚCI WYŻYNY KRAKOWSKO-CZĘSTOCHOWSKIEJ. [THE CHANGES IN THE FAUNA OF BIRDS IN THE NORTHERN PART OF THE CRACOW-WIELUŃ JURASSIC REGION.] *Chrońmy Przyrodę Ojczystą* 28(2): 62-67, 2 figs. Mar.-Apr. 1972. In Polish with English summ. *WR 147: 75*

Nowak, E. [THE RANGE EXPANSION OF ANIMALS AND ITS CAUSES.] *Zesz. Nauk.* 3. 225 p. 1971. [From Ibis 114(3), 1972. In Polish with English summ.] *WR 147: 75*
[Polska Akad. Nauk, Inst. Ekol.] A study of the historical and spatial process of range expansion by 28 animal species in Europe, including the collared dove *Streptopelia decaocto*, tufted duck *Aythya fuligula*, pochard *A. ferina*, black-necked grebe *Podiceps nigricollis*, Syrian woodpecker *Dendrocopos syriacus*, serin *Serinus serinus*, greenish warbler *Phylloscopus trochiloides*, and yellow-breasted bunting *Emberiza aureola*.

Plinz, Werner. VOGELBEOBACHTUNGEN AN DER FRANZÖSISCHEN ATLANTIKKÜSTE. [BIRD OBSERVATIONS ON THE FRENCH ATLANTIC COAST (BRITTANY).] *Ornithol. Mitt.* 24(6): 117-124, illus. June 1972. In German. *WR 147: 75*
[Willerstwiete 19, Hamburg, Germany.] Comparative annotated lists for 1961 and 1971.

Schoennagel, Erich. DIE VOGELWELT DER NORDSEEINSEL BORKUM IM LICHTE SÄKULARER BESTANDSVERÄNDERUNGEN. [THE AVIFAUNA OF THE NORTH SEA ISLAND OF BORKUM. CHANGES OF STATUS DURING THE PAST CENTURY.] *Ornithol. Mitt.* 24(7): 135-152, illus. July 1972. In German. *WR 147: 75*
[Am Meisenbrink 14, Hameln, Germany.]

Winterbottom, J. M. RESULTS OF THE GARDEN BIRD COUNTS ORGANISED BY THE PERCY FITZPATRICK INSTITUTE OF AFRICAN ORNITHOLOGY, PART 3. *Ostrich* 43. p. 125-129. 1972. *WR 147: 75*
[Percy FitzPatrick Inst. African Ornithol., Univ. Cape Town, Cape Town, South Africa.]

BIRDS--ECONOMICS, CONTROL, MORTALITY

Hendricks, D. Paul, and John W. Martin, Jr. HORSE HAIR AS A MAJOR MORTALITY FACTOR IN NESTLING BARN SWALLOWS. *Southwestern Nat.* 17(3): 295. 6 Oct. 1972. *WR 147: 75*
[956 Yale Drive, Bartlesville, Okla.] *"Hirundo rustica."*

Mizer, A. [ON COCCINELLID BEETLE CONSUMPTION BY BIRDS.] *Vestn. Zool.* 4(6): 21-24. 1970. [From Bird-Banding 42(7), 1971. In Russian with English summ.] *WR 147: 75*

Sosin, V. F., V. N. Ryzhanovskii, and Y. I. Novozhenov. [THE STUDY ON TROPHIC RELATIONS BETWEEN BIRDS AND INVERTEBRATE ANIMALS IN TUNDRA BIOGEOCOENOSES.] *Ekologiya* 1(2): 55-65, illus. 1970. [From Biol. Abstr. 54(2), 1972. In Russian.] *WR 147: 75*

BIRDS--PARASITES & DISEASES

Barus, V. A SURVEY OF PARASITIC NEMATODES OF PICIFORM BIRDS IN CUBA. *Folia Parasitol.* (Prague) 18(4): 315-321, illus. 1971. [From Biol. Abstr. 54(4), 1972.] *WR 147: 75*
[Czechoslovak Acad. Sci., Prague, Czechoslovakia.]

Bennett, Gordon F. BLOOD PARASITES OF SOME BIRDS FROM LABRADOR. *Canadian J. Zool.* 50(3): 353-356. 1972. [From Biol. Abstr. 54(5), 1972. In English with French summ.] *WR 147: 75*
[Univ. Newfoundland, St. John's, Newfoundland, Canada.] Abstract: Birds (454) of 38 spp. were collected from various parts of Labrador and examined for

hematozoa. Birds 171 (37.6%) of 20 spp. harbored one or more blood parasites. Species of *Leucocytozoon* were the most commonly encountered parasites, with a relatively low incidence of *Parahaemoproteus* recorded. *Trypanosoma avium* and microfilaria were also noted.

Dalrymple, J. M., O. P. Young, B. F. Eldridge, and P. K. Russell. ECOLOGY OF ARBOVIRUSES IN A MARYLAND FRESHWATER SWAMP. III. VERTEBRATE HOSTS. *Am. J. Epidemiol.* 96(2): 129-140, 5 figs. Aug. 1972. *WR 147: 76*
[Walter Reed Army Inst. Res., Washington, D.C.] A study of the ecology of western and eastern equine encephalitis (WEE and EEE) viruses in the Pocomoke Cypress Swamp indicated that wild birds were prominently involved in virus amplification during the summer. Both EEE and WEE viruses were isolated from birds, however WEE virus activity was greater.--From abstr.

Dickerman, R. W., W. P. Scherer, A. S. Moorhouse, E. Toaz, M. E. Essex, and R. E. Steele. ECOLOGIC STUDIES OF VENEZUELAN ENCEPHALITIS VIRUS IN SOUTHEASTERN MEXICO: VI. INFECTION OF WILD BIRDS. *Am. J. Trop. Med. Hyg.* 21(1): 66-78. 1972. [From Biol. Abstr. 54(2), 1972.] *WR 147: 76*
[Cornell Univ. Med. Coll., New York, N.Y.]

Dubinina, M. N. [PARASITOLOGICAL INVESTIGATIONS OF BIRDS.] *Izdat. "Nauka" Leningradskoe Otdel.* (Leningrad). 139 p. 1971. Price 96 kopecks. In Russian. *WR 147: 76*

Haas, Glenn E., Richard P. Martin, and Martha Swickard. BIRD FLEAS (SIPHONAPTERA) OF NEW MEXICO. *Canadian Entomol.* 104: 881-883. June 1972. *WR 147: 76*
[N. Mex. Environ. Improvement Agency, Los Alamos.]

Heddleston, K. L., T. Goodson, L. Leibovitz, and C. I. Angstrom. SEROLOGICAL AND BIOCHEMICAL CHARACTERISTICS OF PASTEURELLA MULTOCIDA FROM FREE-FLYING BIRDS AND POULTRY. *Avian Dis.* 16(4): 729-734, 1 fig. July-Sept. 1972. *WR 147: 76*
[Cornell Univ., Duck Res. Lab., Eastport, Long Island, N.Y.] The results of these tests on isolants from New York State indicated a relationship among the epornitics of fowl cholera in White Pekin ducks and herring gulls, and a relationship among some of the epornitics in chickens, turkeys, and a pheasant.--From summ.

Pellérdy, László. LIFE CYCLES INVOLVING SEXUAL AND ASEXUAL GENERATIONS OF *EIMERIA* IN GALLINACEOUS BIRDS. *Parasitol. Hung.* 3(3): 133-146. 1970. [From Biol. Abstr. 54(5), 1972. In English with Hungarian summ.] *WR 147: 76*
[Hungarian Acad. Sci., Budapest, Hungary.]

Pence, Danny B. THE NASAL MITES OF BIRDS FROM LOUISIANA. II. THE GENUS *STERNOSTOMA* (DERMANYSSIDAE: RHINONYSSINAE). *J. Parasitol.* 58(4): 781-789, 18 figs. Aug. 1972. *WR 147: 76*
[La. State Univ., New Orleans.] Abstract: New species, host records, and geographic records of nasal mites of the genus *Sternostoma* are reported from birds in Louisiana. Two new species, *Sternostoma motacilli* from *Anthus spinoletta* and *S. dumetellae* from *Dumetella carolinensis*, are described. New host records are established for *Sternostoma boydi* from *Totanus melanoleucus*, *Larus argentatus*, and *Sterna hirundo*, *S. hirundinis* from *Progne subis* and *Hirundo rustica*, *S. kelloggi* from *Toxostoma rufum*, *S. strandtmanni* from *Caesidix mexicanus* and *Quiscalus quiscula*, *S. tangarae* from *Piranga rubra*, *S. trachacolum* from *Iridoprocne bicolor* and *Myiarchus crinitus*, *S. technaui* from *Turdus migratorius*, and *S. spatulatum* from *Hylocichla guttata*. In addition, *Sternostoma sialiphilus* and *S. porteri* from their type hosts, *Sialia sialis* and *Colaptes auratus*, respectively, are reported for the first time from Louisiana. The systematics and host relationships of these species are discussed.

Pence, Danny B. THE NASAL MITES OF BIRDS FROM LOUISIANA. III. THE GENUS *PTILONYSSUS* (DERMANYSSIDAE: RHINONYSSINAE) WITH DESCRIPTION OF A NEW SPECIES. *J. Parasitol.* 58(4): 790-795, 6 figs. Aug. 1972. *WR 147: 77*
[La. State Univ., New Orleans.] Abstract: A new species and new host records are established for nasal mites of the genus *Ptilonyssus* from passeriform birds in Louisiana. *Ptilonyssus corvi* sp. n. is described from *Corvus brachyrhynchos*. New host records are *Ptilonyssus tyrannus* from *Sayornis phoebe*, *Contopus virens*, and *Epidonax virescens*, *P. callinectoides* from *Myiarchus crinitus*, *P. pari* from *Parus carolinensis*, *P. hoseini* from *Vireo solitarius*, *P. pirangae* from *Parus bicolor*, *P. icteridius* from *Icterus galbula* and *Euphagus carolinus*, *P. morofskyi* from *Geothlypis trichas*, *Dendroica coronata*, *D. pinus*, *Seiurus motacilla*, *Melospiza georgiana*, *Pipilo erythrophthalmus*, *Ammospiza maritima*, and *Zonotrichia albicollis*. In addition, *P. virenis* and *P. angrensis* from *Vireo olivaceus* and *Progne subis*, respectively, are reported for the first time from Louisiana. The systematics and host relationships of these species are discussed.

Pence, Danny B. THE HYPOPI (ACARINA: SARCOPTIFORMES: HYPODERIDAE) FROM THE SUBCUTANEOUS TISSUES OF BIRDS IN LOUISIANA. *J. Med. Entomol.* 9(5): 435-438. 30 Sept. 1972. *WR 147: 77*
[La. State Univ., New Orleans.] Hypopial nymphs of mites of the family Hypoderidae were recovered from the subcutaneous tissues of 10 spp. of birds in Louisiana.--From abstr.

Pierce, M. A. RICKETTSIA-LIKE ORGANISMS IN THE BLOOD OF *TURDUS ABYSSINICUS* IN KENYA. *J. Wildl. Dis.* 8(3): 273-274, 1 fig. July 1972. *WR 147: 77*
[Central Vet. Lab., New Haw, Weybridge, Surrey, England.]

Sorjonen, J. OCCURRENCE OF THREE SPECIES OF *ORNITHOMYIA* (DIPTERA, HIPPOBOSCIDAE) ON BIRDS IN TWO AREAS OF SOUTHERN FINLAND. *Ann. Zool. Fenn.* 8: 442-445. 1971. [From Ibis 114(3), 1972.] *WR 147: 77*

Spasskaya, L. P., and A. A. Spasskii. [CESTODES OF THE BIRDS OF TUVA.] *Akad. Nauk Moldavskoi SSR Inst. Zool.* 252 p., 154 figs. 1971. In Russian. *WR 147: 77*

Wasylik, Antoni. NEST TYPES AND THE ABUNDANCE OF MITES. *Ekol. Pol.* 19(39): 689-699, 3 figs. 1971. In English with Polish summ. *WR 147: 77*
[Inst. Ekol., Warsaw, Nowy Świat 72, Poland.] Description of the relationship between the type of nest of the tree sparrow *(Passer montanus)* and the size of the mite *(Acaroidea)* populations occurring in it. The smallest numbers of mites have been recorded for those nests in which nestlings were never reared and for those in which three broods of nestlings had been reared. The largest mite populations were found in nests after one or two broods.--From abstr.

GAME BIRDS--GENERAL

Anderson, Roy C., and Annie K. Prestwood. *EUDROMOXYURA ELONBYRDI* N. G., N. SP. (NEMATODA: OXYUROIDEA) FROM CRESTED TINAMOU *(EUDROMIA ELEGANS)*. *Canadian J. Zool.* 50: 297-300, 9 figs. 1972. *WR 147: 77*
[Univ. Guelph, Guelph, Ontario, Canada.]

Cooch, F. G., G. W. Kaiser, and L. Wight. REPORT ON SALES OF THE CANADA MIGRATORY GAME BIRD HUNTING PERMIT, MIGRATORY GAME BIRD HARVEST AND HUNTER ACTIVITY, 1971. *Canadian Wildl. Serv. Prog. Notes* no. 28. 25 p. July 1972. In English and French. *WR 147: 77*

Williams, Lovett E., Jr., and Robert W. Phillips. TESTS OF ORAL ANESTHETICS TO CAPTURE MOURNING DOVES AND BOBWHITES. *J. Wildl. Manage.* 36(3): 968-971. July 1972. *WR 147: 77*
[Fla. Game & Fresh Water Fish Comm., Gainesville.] Abstract: Three oral anesthetics were tested on free-feeding wild mourning doves *(Zenaidura macroura)*

and bobwhite quail *(Colinus virginianus)* to evaluate the oral drug capture technique. Tribromoethanol was the best for both species. The best dosages for doves were between 3.50 and 6.00 grams of drug per cup of cracked corn. Optimum dosage for quail was 6.00 to 7.00 grams of drug per cup of cracked corn. Oral drugs appear to be less useful for capturing doves than for capturing quail, but field tests comparing this method with conventional trapping methods are needed. The oral drug method of capture may not be as successful for small flocking birds as it is for larger birds.

QUAIL

Garrett, R. L., L. Z. McFarland, and C. E. Franti. SELECTED CHARACTERISTICS OF EGGS PRODUCED BY JAPANESE QUAIL *(COTURNIX COTURNIX JAPONICA)*. *Poultry Sci.* 51(4): 1370-1376, 7 figs. July 1972. *WR 147: 78*

[Univ. Calif., Davis.] Egg characteristics of many avian species, particularly experimental birds other than domestic fowl, are poorly understood and have been inadequately described. In this report egg characteristics are described for first-year Japanese quail from day of first egg through 220 days of age. Average percentage shell (7.6 ± 0.4%) and shell breadth (25 ± 0.5 mm) were essentially constant for the entire observational period, and provide potentially valuable comparative bases for future studies.--From abstr.

Krehbiel, Janver Don. THE PATHOLOGY OF SPONTANEOUS CATARACTS IN BOBWHITE QUAIL. *Ph.D. thesis, Mich. State Univ.* 118 p. 1972. [From Diss. Abstr. Int. B Sci. Eng. 33(2), 1972.] *WR 147: 78*

Those birds exposed to continuous artificial light had greater numbers of cataracts at an earlier age than did those birds exposed to cyclic natural light.--From abstr.

Sexson, Keith. SURVIVAL AND HARVEST OF PEN-RAISED BOBWHITE QUAIL. *Kans. For., Fish & Game Comm.* 75 p., illus. 1971. *WR 147: 78*

It is recommended that annual stocking of pen-raised bobwhite quail, *Colinus virginianus*, be discontinued by the Kansas Forestry, Fish and Game Commission.

Tomlinson, Roy E. CURRENT STATUS OF THE ENDANGERED MASKED BOBWHITE QUAIL. *Trans. N. Am. Wildl. Nat. Resour. Conf.* 37: 294-311, 3 figs. 1972. *WR 147: 78*

[Patuxent Wildl. Res. Cent., Tucson, Ariz.] "It is my belief that nearly all of the former areas of masked bobwhite distribution have now become unsuitable for this race. Masked bobwhites have persisted only in two areas of Sonora, but nowhere in the United States. The bobwhite population near Mazatan is very small, and only a few other such populations can be expected to exist nearby. The habitat has been deteriorating and is continuing to deteriorate. The bobwhite population near Benjamin Hill is estimated to be in excess of 1,000 birds."

Wilson, H. R., M. W. Holland, Jr., and R. H. Harms. DIETARY CALCIUM AND PHOSPHORUS REQUIREMENTS FOR BOBWHITE CHICKS. *J. Wildl. Manage.* 36(3): 965-968. July 1972. *WR 147: 78*

[Univ. Fla., Gainesville.] Abstract: Two experiments were conducted with bobwhites *(Colinus virginianus)* to determine the optimum calcium and phosphorus levels to be used in a corn-soy diet fed to birds from one day to six weeks of age. Five levels of phosphorus, 0.354, 0.450, 0.550, 0.650, and 0.750 percent, were fed with calcium levels of 0.25 to 0.95 percent. The data indicated that levels of 0.65 percent calcium and 0.650 percent phosphorus gave maximum body weight, bone ash, and viability of chicks.

PHEASANTS

Arnastauskienė, T. [ON THE PHEASANT *(PHASIANUS COLCHICUS L.)* COCCIDIAE IN THE LITHUANIAN SSR.] *Acta Parasitol. Lituanica* 10: 19-23, 1 fig. 1970. In Russian with Lithuanian and English summ. *WR 147: 78*

Arnastauskienė, T., J. Kazlauskas, and B. Kadytė. [ON THE PARASITIC FAUNA OF THE PHEASANTS *(PHASIANUS COLCHICUS* L.) IN THE LITHUANIAN SSR.] *Acta Parasitol. Lituanica* 10: 95-101, 1 fig. 1970. In Russian with Lithuanian and English summ. *WR 147: 79*

Azevedo, John A., Jr., Eldridge G. Hunt, and Leon A. Woods, Jr. MELANISTIC MUTANT IN RINGNECK PHEASANTS. *Calif. Fish Game* 58(3): 175-178. July 1972. *WR 147: 79*

Abstract: Melanistic pheasants exhibiting tremors have appeared in game farm ringneck pheasants. Matings over a 3-year period indicated that the abnormality was caused by an autosomal recessive gene. Abnormal chicks were produced by parents that received DDT in their diets.

Biadi, F. MISE EN ÉVIDENCE DE LA REPRODUCTION, EN SEMI-LIBERTÉ, DES FAISANS D'ÉLEVAGE DU GENRE *PHASIANUS.* [ASSESSMENT BASED UPON REPRODUCTION ON THE EFFECTIVENESS OF SEMI-CAPTIVITY OF FARM-REARED PHEASANTS OF THE GENUS *PHASIANUS.*] *Bull. Spéc. Conseil. Supér. Chasse (Gallinacés Gibier)* 15: 57-63. 1971. [From Ibis 114(3), 1972. In French.] *WR 147: 79*

Edwards, William R., and Rodney J. Smith. PECKING AS A MORTALITY FACTOR IN PENNED RING-NECKED PHEASANT CHICKS. *J. Wildl. Manage.* 36(3): 972-974. July 1972. *WR 147: 79*

[Ill. Nat. Hist. Surv., Urbana.] Abstract: Pecking of chicks by adult hen pheasants *(Phasianus colchicus)* accounted for a known mortality of 2 to 14 percent of chicks hatched in pens 0.825 to 40 acres in size in a series of studies on pheasant reproduction conducted in Ohio from 1951 through 1954. Repeated observations of pecking as a cause of mortality of confined juvenile pheasants raise questions as to the possible occurrence of pecking in wild populations.

Greenberg, Robert E., Stanley L. Etter, and William L. Anderson. EVALUATION OF PROXIMAL PRIMARY FEATHER CRITERIA FOR AGING WILD PHEASANTS. *J. Wildl. Manage.* 36(3): 700-705, 2 figs. July 1972. *WR 147: 79*

[Ill. Nat. Hist. Surv., Urbana.] Abstract: Wild Illinois pheasants *(Phasianus colchicus)* captured in fall and winter, 1969-70 and 1970-71, and separated into juvenile and adult age-classes on the basis of bursa depths, were used to evaluate proximal (innermost or Number 1) primary measurements as age criteria. The proximal primary shaft diameters (PPSD) of 307 cocks, collected during fall, separated into juvenile and adult age-classes at 3.210 mm (0.1264 inch) with 92 percent reliability. A sample of 46 cocks, collected during winter, separated with 98 percent reliability at the same measurement. In a sample of 285 hens captured during fall, the separation point occurred at 2.908 mm (0.1145 inch) with 90 percent reliability. However, in a sample of 234 hens taken during winter, separation occurred at 2.858 mm (0.1125 inch) with 92 percent reliability. The reliability of PPSD as separation criteria could not be enhanced by taking into account the lengths of the proximal primaries. Oven-drying of proximal primaries was necessary to obtain repeatable measurements. Mean PPSD of juveniles of both sexes were significantly larger in the fall than in the winter, whereas those of adults showed no significant difference. The fully grown PPSD of juveniles of both sexes, as measured in fall, were positively correlated with their estimated hatching dates. The PPSD of adults were inversely correlated with their estimated dates of molt initiation. Although there was no apparent explanation for seasonal differences in PPSD, the smaller PPSD of juveniles in winter suggested lower fall-to-winter survival rates of late-hatched juveniles (with large proximal primaries), compared with early-hatched juveniles.

Greiner, Ellis C. PARASITES OF NEBRASKA PHEASANTS. *J. Wildl. Dis.* 8(3): 203-206, 1 fig. July 1972. *WR 147: 79*

[Univ. Nebr. State Mus., Lincoln.] Abstract: Parasite prevalence, intensity, and diversity in Nebraska pheasants *(Phasianus colchicus)* were studied during the fall of 1971. Fifty-four of 63 (86%) pheasants examined for helminths harbored at least one parasite species. *Heterakis gallinarum* (65% of the pheasants), *Choanotaenia infundibulum* (48%), *Echinoparyphium recurvatum* (1.6%),

and *Zygocotyle lunata* (1.6%) were recovered. Two of 15 (13%) birds examined for coccidia possessed *Eimeria phasiani*. None of 35 pheasants examined for hematozoa had patent infections.

Hoffmeyer, Inge. FEATHER PECKING IN PHEASANTS: AN ETHOLOGICAL APPROACH TO THE PROBLEM. *Danish Rev. Game Biol.* 6(1): 1-36, illus. 1969. [From Biol. Abstr. 54(5), 1972. In English with Danish and Russian summ.] *WR 147: 80*
[Univ. Copenhagen, Copenhagen, Denmark.] Feather pecking is a substitute for normal feeding behavior in the absence of objects which, in the natural habitat, provide optimal sign stimuli for food pecking.

Jakowski, R. M., and D. S. Wyand. MARBLE SPLEEN DISEASE IN RING-NECKED PHEASANTS: DEMONSTRATION OF AGAR GEL PRECIPITIN ANTIBODY IN PHEASANTS FROM AN INFECTED FLOCK. *J. Wildl. Dis.* 8(3): 261-263, 2 figs. July 1972. *WR 147: 80*
[Univ. Conn., Storrs.] Abstract: Agar gel precipitin (AGP) antibody was detected in 31 of 283 (11%) pheasant *(Phasianus colchicus)* serum samples using antigen prepared with spleen tissue from a pheasant dying of marble spleen disease (MSD). These same serum samples failed to react with normal pheasant spleen or antigens of chick embryo lethal orphan (CELO) virus or Marek's disease virus.

Kugi, Giiti. [ON THE TETRATHYRIDIUM LARVA OF *MESOCESTOIDES* SP. FROM THE JAPANESE PHEASANT, *PHASIANUS (COLCHICUS) VERSICOLOR.*] *Japanese J. Parasitol.* 20(2): 138-141, illus. 1971. [From Biol. Abstr. 54(4), 1972. In Japanese with English summ.] *WR 147: 80*
[Beppu, Oita, Japan.]

TURKEY

Gaines, Bill. EASTERN WILD TURKEY IN ARKANSAS. *Ark. Game & Fish Bull.* 5(1): 2-5, illus. Spring/Summer 1972. *WR 147: 80*
"Since 1937 nearly 3,300 turkeys have been trapped in Arkansas in locations which had sufficient numbers and released in 73 different counties in places with favorable range that had once supported turkey. The success of those efforts are realized today with the turkey kill increasing from 145 in 1950 to a peak spring kill of 1,584 gobblers in 1965 or more than a 10 fold increase."

Tzilkowski, Walter M. WILD TURKEY WINTER ROOST SITES IN SOUTHWEST PENNSYLVANIA. *M.S. thesis, W. Va. Univ.* 32 p. 1971. *WR 147: 80*
Thirteen eastern wild turkey roost sites were found in Rachelwood Wildlife Research Preserve the winter of 1970-71. Measurements were recorded for 10 variables that may influence the selection of a roost site. No differences were detected between utilized and non-utilized sites.--Courtesy/ David E. Samuel.

GROUSE, PARTRIDGE, ETC.

Andreev, A. V. [ECOLOGICAL CHARACTERISTICS OF *LAGOPUS MUTUS* ON THE COMMANDER ISLANDS.] *Zool. Zh.* 50(8): 1260-1262, illus. 1971. [From Biol. Abstr. 54(4), 1972. In Russian with English summ.] *WR 147: 80*
[Leningrad State Univ., Leningrad, USSR.]

Bakhmutov, V. [ON THE POPULATION DYNAMICS OF THE WILLOW PTARMIGAN IN BOLSHEZEMELSKAYA TUNDRA, ON YAMALA AND TAIMYR.] *Ekologiya* 2(3): 100-101. 1971. [From Bird-Banding 43(1), 1972. In Russian.] *WR 147: 80*
In a 35-year period, 1935-1969, in the willow ptarmigan, *Lagopus lagopus*, population, there were irregularly spaced fluctuations, not wholly coincident, in the Yamala and Taimyr subareas, the declines occurring in 1943, 1945, 1959, and 1969 in the former, and 1954, 1963, and 1969 in the latter. Recoveries proceeded slower than the declines. In a 23-year survey of an area of 1,664,900 km^2, the kill of the species by hunters totaled 5,400,000.

Baltin, S. ZUR BIOLOGIE UND ETHOLOGIE DES TALEGALLA-HUHNS *(ALECTURA LATHAMI* GRAY) UNTER BESONDERER BERÜCKSICHTIGUNG DES VERHALTENS WÄHREND DER BRUTPERIODE. [BIOLOGY AND ETHOLOGY OF *ALECTURA LATHAMI*, WITH SPECIAL REFERENCE TO BEHAVIOR DURING INCUBATION.] *Z. Tierpsychol.* 26(5): 524-572. 1969. [From Bird-Banding 42(3), 1971. In German with English summ.] *WR 147: 81*

Birkan, M. G. POPULATIONS DE PERDRIX GRISE *(PERDIX PERDIX)* ET AGRICULTURE SUR UN TERRITOIRE DE CHASSE PRÈS DE PROVINS (SEINE-ET-MARNE). [POPULATIONS OF *PERDIX PERDIX* AND AGRICULTURE IN A HUNTING AREA NEAR PROVINS (SEINE-ET-MARNE).] *Bull. Spéc. Conseil Supér. Chasse (Gallinacés Gibier)* 15: 1-8. 1971. [From Ibis 114(3), 1972. In French.] *WR 147: 81*

Birkan, M. G. RÉUSSITE DES LÂCHERS DE PERDRIX GRISE *(PERDIX PERDIX)* ET DE PERDRIX ROUGE *(ALECTORIS RUFA)* D'ÉLEVAGE. [RESULTS FROM THE RELEASE OF HAND-REARED *PERDIX PERDIX* AND *ALECTORIS RUFA*.] *Bull. Spéc. Conseil Supér. Chasse (Gallinacés Gibier)* 15: 44-56. 1971. [From Ibis 114(3), 1972. In French.] *WR 147: 81*

Campbell, Howard. A POPULATION STUDY OF LESSER PRAIRIE CHICKENS IN NEW MEXICO. *J. Wildl. Manage.* 36(3): 689-699, 2 figs. July 1972. *WR 147: 81*
[N. Mex. Dep. Game & Fish, Albuquerque.] Abstract: A total of 285 lesser prairie chickens *(Tympanuchus pallidicinctus)* were mist-netted in the spring on 16 booming grounds (display grounds) in eastern New Mexico during 1962-70. Life tables, based on capture-recapture data from three consistently trapped grounds, were constructed for males only, as comparatively few females were trapped and none was recaptured. The male population underwent virtually a complete turnover in about five years. The mean annual overall mortality rate of males was calculated at about 65 percent. Inefficiencies inherent in the trapping method (probable failure to recapture all banded birds present on booming grounds each year) presumably magnified the calculated mortality rate, possibly by about five to 10 percent. Age and sex ratios indicate that adult females had a higher mortality rate than adult males. The removal by hunting of about 1,100 birds per year, on the average, over a 12-year period had no observed harmful effect on the population. Recaptures of banded birds suggest that adult males are faithful throughout life to the same booming grounds where they initially established territories, but hunter recoveries show that at least some males shift for feeding purposes in fall and winter to harvested grain fields that may be several miles from their accustomed booming grounds.

Gardarsson, A., and R. Moss. SELECTION OF FOOD BY ICELANDIC PTARMIGAN IN RELATION TO ITS AVAILABILITY AND NUTRITIVE VALUE. *Symp. British Ecol. Soc.* 10: 47-71. 1970. [From Bird-Banding 42(4), 1971.] *WR 147: 81*
"Lagopus mutus."

Gullion, Gordon W. IMPROVING YOUR FORESTED LANDS FOR RUFFED GROUSE. *Ruffed Grouse Soc. N. Am.* (Rochester, N.Y.). 34 p., [12] figs. 1972. *WR 147: 81*
Guidelines for the management of woodlands in a manner designed to maintain or improve the quality of habitat for ruffed grouse *(Bonasa umbellus)*. These guidelines have been developed for forested lands where the aspens *(Populus tremuloides; P. grandidentata)*, or popple are or were an important part of the forest composition.--From intro.

Harlow, Richard F., and W. Alan Guthrie. GROUSE CROPS, A HABITAT BAROMETER. *Va. Wildl.* 33(10): 10-11, 5 figs. Oct. 1972. *WR 147: 81*
[SE Forest Exp. Sta., Blacksburg, Va.] Fall and winter food habits are derived from analysis of former and recent studies of crop and gizzard contents of Virginia ruffed grouse.

Malafeev, Y. M. [CHARACTERISTICS OF THE NESTING OF THE CAPERCAILLIE IN 1969 IN THE SOUTHERN TAIGA OF THE SVERDLOVSK REGION.] *Ekologiya* 1(3): 76-78. 1970. [From Biol. Abstr. 54(4), 1972. In Russian.] *WR 147: 81*

Miller, G. R., A. Watson, and D. Jenkins. RESPONSES OF RED GROUSE POPULATIONS TO EXPERIMENTAL IMPROVEMENT OF THEIR FOOD. *Symp. British Ecol. Soc.* 10: 323-335. 1970. [From Bird-Banding 42(3), 1971.] *WR 147: 82*
"Lagopus lagopus."

Mottl, S. LES CLASSES D'ÂGES DANS LES POPULATIONS DE PERDRIX *(PERDIX PERDIX)* ET DE FAISANS *(PHASIANUS COLCHICUS)*. [AGE CLASSES OF *PERDIX PERDIX* AND *PHASIANUS COLCHICUS* POPULATIONS.] *Bull. Spéc. Conseil Supér. Chasse (Gallinacés Gibier)* 15: 35-43. 1971. [From Ibis 114(3), 1972. In French.] *WR 147: 82*

Olech, Bogumiła. REALIZED PRODUCTION, MORTALITY AND SEX STRUCTURE OF A PARTRIDGE *(PERDIX PERDIX L.)* POPULATION AND ITS UTILIZATION FOR GAME PURPOSES IN POLAND. *Ekol. Pol.* 19(37): 617-650, 4 figs. 1971. In English with Polish summ. *WR 147: 82*
[Inst. Ekol. PAN, Warsaw, Poland.]

Porath, Wayne R., and Paul A. Vohs. POPULATION ECOLOGY OF RUFFED GROUSE IN NORTHEASTERN IOWA. *J. Wildl. Manage.* 36(3): 793-802, 2 figs. July 1972. *WR 147: 82*
[Mo. Dep. Conserv., Columbia.] Abstract: The adult male portion of the population and the production of broods by ruffed grouse *(Bonasa umbellus)* on the western fringe of the current range of the species in North America were studied on a 500-acre area in northeastern Iowa during 1966 and 1967. Forty-two drumming logs associated with 22 activity centers were located. Approximately 75 percent of the drumming male population was captured and marked in 1967. Fifteen birds occupied activity centers at the onset of spring drumming activity. If a 1:1 sex ratio is assumed, the estimate of crude density was 5.6 birds per 100 acres. Hatching dates of 10 clutches in 1966 and 24 in 1967 were grouped: a major peak occurred in the last week of May and a secondary peak occurred the third week of June. The hatching season extended approximately from May 21 to June 26. The estimate of crude density on July 15, 1966, was 14 birds per 100 acres and 21 per 100 acres on July 15, 1967. Mean brood size was 5.5 and 6.6 in 1966 and 1967, respectively. Brood movements apparently were dependent upon physiographical features and cover preferences. Phenology of vegetative development was the only difference noted between areas utilized by broods and those used by adult males during the drumming season.

Potts, R. FACTEURS RÉGISSANT LE TAUX DE SURVIE DES JEUNES DE LA PERDRIX GRISE *(PERDIX PERDIX)*. [FACTORS GOVERNING THE SURVIVAL RATE OF YOUNG GREY PARTRIDGE *(PERDIX PERDIX)*.] *Bull. Spéc. Conseil Supér. Chasse (Gallinacés Gibier)* 15: 23-34. 1971. [From Ibis 114(3), 1972. In French.] *WR 147: 82*

Pullianinen, Erkki. BEHAVIOUR OF A NESTING CAPERCAILLIE *(TETRAO UROGALLUS)* IN NORTHEASTERN LAPLAND. *Ann. Zool. Fenn.* 8(4): 456-462, illus. 1971. [From Biol. Abstr. 54(2), 1972.] *WR 147: 82*
[Univ. Helsinki, Helsinki, Finland.]

Salo, Leo J. AUTUMN AND WINTER DIET OF THE HAZEL GROUSE *(TETRASTES BONASIA L.)* IN NORTHEASTERN FINNISH LAPLAND. *Ann. Zool. Fenn.* 8(4): 543-546, illus. 1971. [From Biol. Abstr. 54(1), 1972.] *WR 147: 82*
[Univ. Helsinki, Helsinki, Finland.]

Vanderschaegen, P. V. A PARTIAL LIST OF THE PARASITES OF THE RUFFED GROUSE. *Passenger Pigeon* 34(2): 70-73. Summer 1972. *WR 147: 82*
"Bonasa umbellus." In all cases the geographic location of the parasite and the parasite's name are the ones used by the author of the paper cited. Most parasites are listed only by major taxonomic groups.

Voronin, E. N. [METHODS OF DETERMINING THE SEX OF THE WILLOW PTARMIGAN IN WINTER PLUMAGE.] *Ekologiya* 2(4): 93-94. 1971. [From Biol. Abstr. 54(6), 1972. In Russian.] *WR 147: 82*
"Lagopus lagopus."

DOVES & PIGEONS

Blankinship, David R., James G. Teer, and William H. Kiel, Jr. MOVEMENTS AND MORTALITY OF WHITE-WINGED DOVES BANDED IN TAMAULIPAS, MEXICO. *Trans. N. Am. Wildl. Nat. Resour. Conf.* 37: 312-325, 3 figs. 1972. *WR 147: 83*
[Tex. A&M Univ., Rockport.] Two regions, (1) South Texas, Tamaulipas, and northern Nuevo Leon, and (2) Central America, particularly Guatemala and El Salvador, stand out as major harvest areas for Tamaulipas-produced whitewings. First-year (direct) recovery rates indicate immature whitewings are more vulnerable to shooting than are adults by some 50 percent. The Tamaulipas-breeding whitewing population does not appear to be overharvested.--From summ.

Braun, Clait E. MOVEMENTS AND HUNTING MORTALITY OF COLORADO BAND-TAILED PIGEONS. *Trans. N. Am. Wildl. Nat. Resour. Conf.* 37: 326-334, 1 fig. 1972. *WR 147: 83*
[Colo. Div. Fish, Game & Parks, Fort Collins.]

LaPerriere, Arthur J. SEASONAL PRECIPITATION INFLUENCE ON MOURNING DOVE BREEDING POPULATIONS IN IOWA. *J. Wildl. Manage.* 36(3): 979-981, 1 fig. July 1972. *WR 147: 83*
[Alaska Coop. Wildl. Res. Unit, College.] Abstract: An inverse relationship was found between June-July rainfall in Iowa and percentage of change in the Iowa mourning dove *(Zenaidura macroura)* call-count index the following year. Indications are that unfavorable seasonal rainfall during the past decade may be involved in the recent decline in breeding populations of mourning doves in Iowa.

LaPerriere, Arthur J., and Arnold O. Haugen. TRENDS OF MOURNING DOVE POPULATIONS IN BOONE COUNTY, IOWA FARM GROVES. *Iowa State J. Sci.* 46(3): 417-424, illus. 1972. [From Biol. Abstr. 54(4), 1972.] *WR 147: 83*
[Alaska Coop. Wildl. Res. Unit, College.] *"Zenaidura macroura."*

Schortemeyer, J. L., and S. L. Beckwith. CHEMICAL CONTROL OF PIGEON REPRODUCTION. *Quart. J. Fla. Acad. Sci.* 34(2): 132-140. 1971. [From Biol. Abstr. 54(5), 1972.] *WR 147: 83*
[Univ. Fla., Gainesville.] Abstract: The chemosterilant Ornitrol was used to control feral pigeon populations in three Florida cities: Jacksonville and Ocala were the treatment areas and St. Augustine was the control area. Careful analysis of each local pigeon population was necessary for effective control. In cities having one major flock, or where flocks are discrete, individual sites may be treated with success. In contrast, large metropolitan areas must receive treatment at all major feeding sites simultaneously if the program is to be effective. The control area underwent a 34% reduction in pigeon population during the study, whereas the treatment areas underwent a reduction of 54%.

WATERFOWL

Anderson, David R., and Charles J. Henny. POPULATION ECOLOGY OF THE MALLARD / I. A REVIEW OF PREVIOUS STUDIES AND THE DISTRIBUTION AND MIGRATION FROM BREEDING AREAS. *Bur. Sport Fish. Wildl. Resour. Publ.* 105. vi + 166 p. 1972. For sale at $1.50 by Supt. Documents, GPO, Washington, D.C. *WR 147: 83*
[Patuxent Wildl. Res. Cent., Laurel, Md.] This report, the first of a series of reports on a comprehensive analysis of population data on the mallard at the continental level, provides background information including a review of the history of waterfowl management and a resumé of previous studies of the mallard. The breeding range of the mallard was subdivided into 16 major and 44 minor reference areas. Each area is discussed in terms of habitat type, quantity of data available, importance to the continental mallard population, and previous waterfowl studies conducted within it.--From abstr.

Batt, Bruce D. J., and George W. Cornwell. THE EFFECTS OF COLD ON MALLARD EMBRYOS. *J. Wildl. Manage.* 36(3): 745-751, 2 figs. July 1972. *WR 147: 84*
[Delta Waterfowl Res. Sta., Delta, Manitoba, Canada.] Abstract: Environmental chambers were used to simulate ambient temperatures and lengths of exposure of mallard *(Anas platyrhynchos)* eggs in nests of wild birds in the vicinity of Delta, Manitoba. The effects of cold exposure on eggs prior to incubation as well as on eggs containing developing embryos were researched. Unincubated eggs withstood much longer exposure than those partially incubated, whereas the oldest embryos were most susceptible to cold. Increased hatchability resulted from cold treatments to both unincubated and partially incubated eggs. When incubated eggs were exposed to 0 C, males suffered greater mortality than females, and an unbalanced sex ratio resulted. Abnormal embryonic development resulting from exposure to cold was observed. The degree of tolerance of the mallard embryo to cold appears sufficiently great to minimize lower hatches in the wild caused by cold alone.

Bengtson, S.-A. FOOD AND FEEDING OF DIVING DUCKS BREEDING AT LAKE MÝVATN, ICELAND. *Ornis Fenn.* 48: 77-92. 1971. [From Ibis 114(3), 1972.] *WR 147: 84*
Esophageal contents of six species were studied.

Bengtson, Sven-Axel. BREEDING ECOLOGY OF THE HARLEQUIN DUCK *HISTRIONICUS HISTRIONICUS* (L.) IN ICELAND. *Ornis Scand.* 3(1): 1-19, 4 figs. 1972. *WR 147: 84*
[Univ. Lund, Lund, Sweden.] Abstract: The Harlequin Duck breeds exclusively at running water. The size of four populations studied intensively since 1966 were not subject to marked yearly fluctuations, except in 1970. Mean density was 1.3 pair/km. The Harlequins arrive at the breeding grounds at the end of April and the males depart at the end of June and the females and young in early September. Both sexes showed a strong year to year site tenacity. Mean clutch-size was 5.7 eggs. Hatching (87% of the clutches) chiefly took place in late July, and survival of young to fledging was about 55%. Adults and young fed mainly on larvae of Diptera Simuliidae. Daily exploitation of simuliid food resources was about 2-7% and varied with the time of the year. In 1970, when food was relatively scarce, reproductive success was low. Time of breeding and migratory movements were associated with food abundance. The populations are limited by food available on the breeding grounds.

Billard, Ruth S., and Philip S. Humphrey. MOLTS AND PLUMAGES IN THE GREATER SCAUP. *J. Wildl. Manage.* 36(3): 765-774, 10 figs. July 1972. *WR 147: 84*
[Conn. Dep. Environ. Protection, Hartford.] Abstract: A quantitative study of molt patterns in the greater scaup *(Aythya marila)* was undertaken using flat skins with feather origins exposed. The intensity and timing of molt in 727 specimens--525 adults and 202 juveniles--are described for the period from October to May. Males molted intensively during November and December, and again in March. Feathers produced during both periods were of the alternate (nuptial) plumage. The March molt was more marked in juvenile than in adult males. Females were completing the molt to basic (eclipse) plumage in October, and by December molting had practically ceased. In late winter, a molt into the alternate (nuptial) plumage was begun. Immature females appeared to molt over a longer period and with lower intensity than adult females.

Bretz, W. L., and K. Schmidt-Nielsen. BIRD RESPIRATION: FLOW PATTERNS IN THE DUCK LUNG. *J. Exp. Biol.* 54: 103-118. 1971. [From Bird-Banding 42(3), 1971.] *WR 147: 84*

Cadwalladr, D. A., Myrfyn Owen, J. V. Morley, and R. S. Cook. WIGEON *(ANAS PENELOPE* L.) CONSERVATION AND SALTING PASTURE MANAGEMENT AT BRIDGWATER BAY NATIONAL NATURE RESERVE, SOMERSET. *J. Appl. Ecol.* 9(2): 417-425, 2 figs. + 1 pl. Aug. 1972. *WR 147: 84*
[Nature Conservancy, Roughmoor, Bishop's Hull, Taunton, Somerset, England.] Summary: A count of the number of wigeon droppings in the two main types of grass sward represented on the salt-marsh of Fenning Island at Bridgwater Bay

over a period of two winters, confirmed earlier subjective observations that wigeon feed on *Puccinellia maritima/Agrostis stolonifera* sward in preference to the *Festuca rubra* sward. Similar observations on sheep droppings on the plots showed that they feed on the same grass species as the wigeon when they are folded on Fenning Island after the wigeon have left. Owing to the greater height above O.D. preference of *F. rubra* than those of *Puccinellia maritima* and *Agrostis stolonifera*, the invasion of the former species into swards composed of the latter two species indicates siltation is occurring on Fenning Island. As this invasion progresses so the feeding areas available to wigeon will decrease with the loss of the *Puccinellia maritima/Agrostis stolonifera* areas. If the wigeon stocks of Bridgwater Bay are to be conserved the spread of *Festuca rubra* and its rank growth will have to be halted. The feasibility of various methods of achieving this by causing the *F. rubra* areas to revert to *Puccinellia maritima/Agrostis stolonifera* such as turf cutting, or greater intensity of sheep grazing, or by mowing is discussed.

Davis, Rolph Aubrey. A COMPARATIVE STUDY OF THE USE OF HABITAT BY ARCTIC LOONS AND RED-THROATED LOONS. *Ph.D. thesis, Univ. Western Ontario.* 1972. [From Diss. Abstr. Int. B Sci. Eng. 33(3), 1972. To obtain a microfilm copy please order directly from the National Library of Canada at Ottawa. A reference copy of this dissertation is available at the D. B. Weldon Library, University of Western Ontario.] *WR 147: 85*
"Gavia arctica and *Gavia stellata."*

Dwernychuk, L. W., and D. A. Boag. HOW VEGETATIVE COVER PROTECTS DUCK NESTS FROM EGG-EATING BIRDS. *J. Wildl. Manage.* 36(3): 955-958. July 1972. *WR 147: 85*
[Univ. Saskatchewan, Regina, Saskatchewan, Canada.] Abstract: The importance of vegetative cover in protecting duck nests from egg-eating birds was evaluated over two seasons on two islands in a lake in central Alberta, Canada. Avian species recorded preying upon the eggs of ducks included ring-billed gulls *(Larus delawarensis)*, California gulls *(L. californicus)*, crows *(Corvus brachyrhynchus)*, and black-billed magpies *(Pica pica)*. Apparently egg pilfering occurred when nests were unattended, mainly during the laying stage. No relationship could be demonstrated between egg loss and amount of screening cover at actual duck nests, possibly because all other factors at the nests were not equal. At artificially placed nests, egg loss was inversely correlated with the amount of overhead cover, suggesting that visibility of eggs was a major factor in their destruction. However, avian predators must have used additional visual cues in locating well-hidden nests, the most likely being disturbed vegetation.

Kley, Thomas J., Jr., and Caryn L. Kley. USE OF CRATER LAKE BY WATERFOWL. *Murrelet* 53(2): 27. May-Aug. 1972. *WR 147: 85*
[Humboldt State Coll., Arcata, Calif.]

Friend, M., and D. O. Trainer. EXPERIMENTAL NEWCASTLE DISEASE STUDIES IN THE MALLARD. *Avian Dis.* 16(4): 700-713, 4 figs. July-Sept. 1972. *WR 147: 85*
[Univ. Wis., Madison.]

Grandy, John W. IV. WINTER DISTRIBUTION OF *MELAMPUS BIDENTATUS* (SAY) ON A CAPE COD SALT MARSH. *Nautilus* 85(3): 106-109. Jan. 1972. *WR 147: 85*
[Natl. Parks & Conserv. Assoc., 1701 18th St. N.W., Washington, D.C.] Salt marsh snails *(Melampus bidentatus)* sometimes comprise much of the food for wintering black ducks *(Anas rubripes)*.

Henny, Charles J. AN ANALYSIS OF THE POPULATION DYNAMICS OF SELECTED AVIAN SPECIES / WITH SPECIAL REFERENCE TO CHANGES DURING THE MODERN PESTICIDE ERA. *Bur. Sport Fish. Wildl. Wildl. Res. Rep.* 1. iv + 99 p., 7 figs., 16 pls. 1972. For sale at $1.00 by Supt. Documents, GPO, Washington, D.C. *WR 147: 85*
[Patuxent Wildl. Res. Cent., Laurel, Md.] The impact of pesticides on the mortality rates and recruitment rates of nongame birds during the last 25 years was evaluated by studying the population dynamics of 16 spp. A mathematical

model showing the relations between population parameters that yielded stable populations was developed. The information needed for the model included (1) mortality rate schedule (obtained from recoveries of banded birds), (2) recruitment rates, and (3) the age of sexual maturity.--From abstr.

Henny, Charles J., David H. Anderson, and Richard S. Pospahala. AERIAL SURVEYS OF WATERFOWL PRODUCTION IN NORTH AMERICA, 1955-71. *U.S. Fish Wildl. Serv. Spec. Sci. Rep. Wildl.* no. 160. iv + 48 p., 9 figs. 1972. For sale by Supt. Documents, GPO, Washington, D.C., at 75¢. *WR 147: 86*

[Patuxent Wildl. Res. Cent., Laurel, Md.] Basic information obtained from the July Waterfowl Production Survey is presented in 32 appendix tables for the period 1955-71. Data presented include: (1) the number of July ponds, (2) the brood index, (3) the average size for Class II and Class III broods, and (4) the late nesting index.--From summ.

Jacoby, Harald, and Hans Leuzinger. DIE WANDERMUSCHEL *(DREISSENA POLYMORPHA)* ALS NAHRUNG DER WASSERVOGEL AM BODENSEE. [*DREISSENA POLYMORPHA* AS FOOD FOR WATERFOWL AT LAKE CONSTANCE.] *Ans. Ornithol. Ges. Bayern* 11(1): 26-35. 1972. In German with English summ. *WR 147: 86*

[Beyerlestrasse 22, Konstanz, Switzerland.] Mass occurrence of *Dreissena polymorpha* in Lake Constance has led to a large increase of wintering waterfowl. *Dreissena* is not only consumed by diving birds (red-crested pochard, pochard, ferruginous duck, tufted duck, scaup, eider, goldeneye, red-breasted merganser, goosander, coot), but also by other kinds of waterfowl (mute swan, shelduck, gadwall, mallard, moorhen, herring gull, common gull and black-headed gull); to some extent these species (especially common and black-headed gull but also mallard) sponge on coot and other diving birds.--From summ.

Kelsall, John P. CHEMICAL ELEMENTS IN WATERFOWL FLIGHT FEATHERS. *Canadian Wildl. Serv. Prog. Notes* no. 17. 11 p. Oct. 1970. In English and French. *WR 147: 86*

[Canadian Wildl. Serv., Edmonton, Alberta, Canada.] Findings are presented in both text and tables.

Kelsall, John P. COMPARATIVE ANALYSIS OF FEATHER PARTS FROM WILD MALLARDS. *Canadian Wildl. Serv. Prog. Notes* no. 18. 6 p. Oct. 1970. In English and French. *WR 147: 86*

[Canadian Wildl. Serv., Edmonton, Alberta, Canada.] *"Anser c. caerulescens."*

Kiel, William H., Jr., Arthur S. Hawkins, and Nolan G. Perret. WATERFOWL HABITAT TRENDS IN THE ASPEN PARKLAND OF MANITOBA. *Canadian Wildl. Serv. Rep. Ser.* no. 18. 63 p., illus. 1972. Price $1.25. *WR 147: 86*

Description of natural and man-made changes in waterfowl habitat in the 4,100-square-mile Minnedosa district of the aspen parkland of Manitoba.

Kohel, Michael E. MIGRATION AND NESTING PATTERNS OF THE COMMON LOON IN WISCONSIN, 1970. *Passenger Pigeon* 34(2): 55-57, 3 figs. Summer 1972. *WR 147: 86*

[U.S. For. Serv., Ely, Minn.] *"Gavia immer."*

Leys, H. N., and J. J. F. E. DeWilde. HET VOORKOMEN VAN DE FUUT *PODICEPS CRISTATUS* L. IN NEDERLAND. [THE OCCURRENCE OF THE GREAT CRESTED GREBE, *PODICEPS CRISTATUS* L. IN THE NETHERLANDS.] *Limosa* 44(3/4): 133-183, illus. 1971. [From Biol. Abstr. 54(3), 1972. In Dutch with English summ.] *WR 147: 86*

[Res. Inst. Nat. Manage., Leersum, Netherlands.] Abstract: Population census, nesting sites, breeding habits, clutch size and distribution of *P. cristatus* in the Netherlands are indicated. Recommendations are also given for protection of this bird in the area.

Mahéo, R. LE STATIONNEMENT HIVERNAL DES ANATIDÉS DANS LE GOLFE DU MORBIHAN (BRETAGNE MÉRIDIONALE): SAISONS 1960-61 À 1969-70. [THE WINTER POPULATION OF WATERFOWL IN THE GULF OF MORBIHAN (SOUTHERN BRITTANY): SEASONS 1960-61 TO 1969-70.] *Oiseau* (Paris) 41: 11-40. 1971. [From Ibis 114(3), 1972. In French.] *WR 147: 87*

Evolution of duck and brent geese *Branta b. berniola* populations during ten years.

Nero, Robert W. FURTHER RECORDS OF SUMMER FLOCKING OF COMMON LOON. *Blue Jay* 30(2): 85-86. June 1972. *WR 147: 87*

[Dep. Mines, Resour. & Environ. Mgmt., Winnipeg, Manitoba, Canada.]

Nilsson, Leif. HABITAT SELECTION, FOOD CHOICE, AND FEEDING HABITS OF DIVING DUCKS IN COASTAL WATERS OF SOUTH SWEDEN DURING THE NON-BREEDING SEASON. *Ornis Scand.* 3(1): 55-78, 11 figs. 1972. *WR 147: 87*

[Helgonavägen 5, Lund, Sweden.] Abstract: Diving ducks wintering on the coasts of Scania showed an uneven distribution that was partly caused by differences in the abundance of food and the availability of suitable resting places, partly by tradition. Differences in diving ability between species were reflected in the local distribution. The main food of the bottom-diving species was *Mytilus edulis*, but there was variation in additional food items amongst the different species. Calculated rates of exploitation in different parts of the study areas showed that food resources were sufficient for much larger numbers of ducks than were present.

Oleinikov, N. S. ARTIFICIAL BREEDING SITES FOR WILD DUCKS. *Published for the U.S. Department of the Interior, Bureau of Sport Fisheries and the National Science Foundation, Washington, D.C. by the Indian National Scientific Documentation Center* (New Delhi). TT 68-50694/TT 70-57760. viii + 125 p., 45 figs. 1971. Russian original published by Izdatel'stvo "Lesnaya Promyshlennost", Moscow, USSR, in 1966. [Translation available from U.S. Dep. Commerce, National Technical Information Service, Springfield, Va.] *WR 147: 87*

Various types and methods of construction of artificial breeding sites tested by long practice, and the most important principles of game husbandry concerning the captivation, conservation and raising of ducks are described in detail.--From annotation.

Pavlinin, V. N. [DISCOVERY OF MOLTING WHITE-HEADED DUCKS IN THE USSR.] *Ekologiya* 1(1): 99-100. 1970. [From Biol. Abstr. 54(5), 1972. In Russian.] *WR 147: 87*

[Inst. Plant Anim. Ecol., Ural Branch, Acad. Sci. USSR, Sverdlovsk, USSR.]

Renouf, Richard N. WATERFOWL UTILIZATION OF BEAVER PONDS IN NEW BRUNSWICK. *J. Wildl. Manage.* 36(3): 740-744, 1 fig. July 1972. *WR 147: 87*

[Fredricton, New Brunswick, Canada.] Abstract: Waterfowl utilization of 41 beaver ponds in south-central New Brunswick was studied during 1969. Ponds occupied by beaver *(Castor canadensis)*, temporarily or during the entire field season, were defined as active. There were 15 active and 26 inactive ponds. Black ducks *(Anas rubripes)* comprised 27 of the 47 broods observed. In addition, green-winged teal *(Anas carolinensis)*, hooded merganser *(Lophodytes cucullatus)*, ringed-necked duck *(Aythya collaris)*, common goldeneye *(Bucephala clangula)*, and mallard *(Anas platyrhynchos)* broods were seen. Thirty-eight broods were sighted on active ponds and only nine on inactive ponds. Active ponds contained 0.75 brood per acre and inactive ponds 0.11 brood per acre. The seasonal drop of the water level was less in active ponds than in inactive ponds. Hence, brood cover was more abundant in active ponds, and the active ponds were better brood-rearing areas.

Robinson, G. G. W. A LITERATURE REVIEW ON VEGETATION MAPPING IN WATERFOWL BIOLOGY. *Colo. Div. Game Fish Parks Spec. Rep.* no. 26. iv + 15 p. Aug. 1971. Price $1.00. *WR 147: 87*

Ryan, Richard A. BODY WEIGHT AND WEIGHT CHANGES OF WINTERING DIVING DUCKS. *J. Wildl. Manage.* 36(3): 759-765, 1 fig. July 1972. *WR 147: 88*

[Hobart & William Smith Colleges, Geneva, N.Y.] Abstract: Weights of 1,281 diving ducks of five species livetrapped on Seneca Lake, Ontario County, New York, during January, February, and March of 1960, 1961, 1962, 1965, and 1971 are reported. Body weights drop significantly from early January through late February and March. The weight loss by redheads *(Aythya americana)* is emphasized with significant differences shown in the 11-year time span between 1960 and 1971. To make conjectures as to this difference, it is suggested that periods of zero to subzero temperatures occurring in 1971 and not in 1960 influenced weight loss. Also, dramatically different, and possibly less suitable, food resources dominating the aquatic environment of the lake in 1971 contributed to weight loss.

Sen, A. R. SOME NONSAMPLING ERRORS IN THE CANADIAN WATERFOWL MAIL SURVEY. *J. Wildl. Manage.* 36(3): 951-954. July 1972. *WR 147: 88*

[Canadian Wildl. Serv., Ottawa, Ontario, Canada.] Abstract: Nonsampling errors in the mail questionnaire survey, conducted in Canada to measure the size of the waterfowl kill and hunting activity, were investigated. A special survey was conducted in Ontario to compare the characteristics of steady hunters hunting each year (the only group contacted in the operational survey) with characteristics of unsteady hunters who were not active the previous season. Also, the reported hunting success and activity during the early part of the season, based on a questionnaire received in October, was compared with reports obtained from a questionnaire received by hunters in December. It was found that omitting the unsteady hunters in the national survey caused an estimated upward bias, based on Ontario hunters, of about 9 percent. Questionnaires completed by steady hunters at the end of the season in December indicated a smaller kill and less hunting activity during the months of September and October than questionnaires completed at the end of October. In contrast, the reported kill of the unsteady hunter at the end of December appeared to be slightly higher than at the end of October. The overall results, however, followed the trends of the steady hunter.

Shcherbinina, O. [ON SEASONAL DYNAMICS OF BIRD LICE INFESTATION ON THE COOT IN THE KARAKUM CANAL ZONE.] *Izvest. Akad. Nauk Turkmenskoi SSR, Ser. Biol.* 1971 (2): 66-69. 1971. [From Bird-Banding 43(1), 1972. In Russian.] *WR 147: 88*

Soutiere, Edward C., Horace S. Myrick, and Eric G. Bolen. CHRONOLOGY AND BEHAVIOR OF AMERICAN WIDGEON WINTERING IN TEXAS. *J. Wildl. Manage.* 36(3): 752-758, 2 figs. July 1972. *WR 147: 88*

[Tex. Tech Univ., Lubbock.] Abstract: American widgeon *(Mareca americana)* wintering in the Texas Panhandle in recent years began arriving by September 10. The main flock arrived on an average date of October 27 at Muleshoe National Wildlife Refuge. Peak widgeon populations, sometimes numbering over 200,000 birds at Buffalo Lake National Wildlife Refuge, are usually reached by late December. Widgeon may comprise as much as 30 percent of the total duck population wintering in the Panhandle region. Sex ratios at this time typically show a preponderance of males (average of 65 percent). Widgeon are generally regarded as initiating courtship later than most other species of puddle ducks *(Anas* spp.*)*, but courtship behavior, as measured by male-female associations, was observed in 27 percent of the widgeon wintering near Lubbock in late November 1970. Courtship flights were observed on several occasions as were three instances of copulatory sequences. The earliest copulation occurred on January 22, 1971, well in advance of dates published elsewhere. After a wintering period of 102-105 days, the widgeon at each refuge departed the Texas Panhandle for their northern breeding areas.

Stott, Richard S., and David P. Olson. DIFFERENTIAL VULNERABILITY PATTERNS AMONG THREE SPECIES OF SEA DUCKS. *J. Wildl. Manage.* 36(3): 775-783, 2 figs. July 1972. *WR 147: 88*

[Univ. N.H., Durham.] Abstract: During the 1969 and 1970 hunting seasons, 1,530 white-winged scoters *(Melanitta deglandi)*, surf scoters *(M. perspicillata)*, and common scoters *(Oidemia nigra)* were observed responding to decoys in typical

scoter hunting situations on the New Hampshire coastline. Results indicated that the common scoter was extremely vulnerable to actual hunting, the surf scoter was intermediate, and the white-winged scoter was the least vulnerable. These differences in vulnerability patterns influenced the composition of the scoter harvest as compared with the relative abundance of the three species on the study area. The literature indicates that changes in population levels and winter distribution of scoters have occurred. The described differences in vulnerability, coupled with past hunting pressure, provide a mechanism by which these changes could have happened. To more fully understand the future dynamics of scoter populations in relation to harvest, more accurate population measurements are needed.

Stoudt, Jerome H. ECOLOGICAL FACTORS AFFECTING WATERFOWL PRODUCTION IN THE SASKATCHEWAN PARKLANDS. *Bur. Sport Fish. Wildl. Resour. Publ.* no. 99. iv + 58 p., 30 figs. 1971. For sale by Supt. Documents, GPO, Washington, D.C. at 60¢. *WR 147: 89*

An intensive study of ecological factors affecting waterfowl production in parkland habitat conducted by the Bureau of Sport Fisheries and Wildlife near Redvers in southeastern Saskatchewan from 1952 to 1965 is discussed.

Swanson, George A., and Alan B. Sargeant. OBSERVATION OF NIGHTTIME FEEDING BEHAVIOR OF DUCKS. *J. Wildl. Manage.* 36(3): 959-961, 1 fig. July 1972. *WR 147: 89*

[Northern Prairie Wildl. Res. Cent., Jamestown, N. Dak.] Abstract: A night vision scope was used during 1969-71 to study the nighttime feeding behavior of ducks on prairie wetlands of south-central North Dakota. Adult and immature ducks were observed feeding between 9:00 p.m. and 4:00 a.m., predominantly on midges (Chironomidae) and mayflies (Ephemeroptera). The emergence pattern of these insects appeared to be a major factor influencing duck activity and feeding behavior at night.

SWANS & GEESE

Arnastauskienė, T. [ON THE GEESE INFECTION WITH COCCIDIAE IN THE LITHUANIAN SSR.] *Acta Parasitol. Lituanica* 10: 13-17. 1970. In Russian with Lithuanian and English summ. *WR 147: 89*

Bennett, Gordon F., and Charles D. MacInnes. BLOOD PARASITES OF GEESE OF THE MCCONNELL RIVER, N.W.T. *Canadian J. Zool.* 50(1): 1-4. 1972. [From Biol. Abstr. 54(1), 1972. In English with French summ.] *WR 147: 89*

[Univ. Newfoundland, St. John's, Newfoundland, Canada.]

Flath, Dennis L. REPRODUCTIVE SUCCESS OF CANADA GEESE IN THE BITTERROOT VALLEY, MONTANA. *M.S. thesis, Univ. Mont.* 61 p. 1970. *WR 147: 89*

Kaźmierski, Janusz. LĘGOWISKA ŁABĘDZIA NIEMEGO *CYGNUS OLOR* W POWIECIE ŻNIŃSKIM. [BREEDING LOCALITIES OF THE MUTE SWAN *CYGNUS OLOR* (GM.) IN THE DISTRICT OF ŻNIN.] *Chrońmy Przyrodę Ojczystą* 28(2): 62, illus. Mar.-Apr. 1972. In Polish with English summ. *WR 147: 89*

Lund, Hj. M.-K. [RINGING OF GREYLAG GEESE, *ANSER ANSER*, IN NORWAY.] *Sterna* 10: 247-250. 1971. [From Ibis 114(3), 1972. In Norwegian with English summ.] *WR 147: 89*

Nieman, Dan. TRUMPETER SWANS IN THE CYPRESS HILLS. *Blue Jay* 30(2): 93-95, illus. June 1972. *WR 147: 89*

[Canadian Wildl. Serv., Saskatoon, Saskatchewan, Canada.] "The breeding population of Trumpeter Swans [*Olor buccinator*] in the Cypress Hills of Saskatchewan remained at one pair until 1961 when an additional family group was observed. In 1971, an intensive survey of the area revealed a total of 16 birds, including three breeding pairs. This is the highest population yet reported in the Cypress Hills."

Owen, Myrfyn. MOVEMENTS AND FEEDING ECOLOGY OF WHITE-FRONTED GEESE AT THE NEW GROUNDS, SLIMBRIDGE. *J. Appl. Ecol.* 9(2): 385-398, 5 figs. Aug. 1972. *WR 147: 90*

[Wildfowl Trust, Slimbridge, Gloucester, England.] Summary: The winter feeding ecology of a flock of white-fronted geese is described. The numbers and distribution of the geese were monitored over 500 ha of pastureland over three seasons, and related to disturbance, food availability and other factors. Disturbance was the main factor affecting goose distribution and in most seasons the potential usage of the area is reduced to half by this factor. Food is not normally in short supply, but a limit on goose usage of favoured fields is set by stock grazing pressure in early winter. This is the second most important factor. The British wintering population of European white-fronted geese is likely to increase in future because of drainage of sites on the Continent. It is suggested that the carrying capacity of the New Grounds could be increased to accommodate some of this increase by reducing sheep grazing in early winter and by inwintering farm stock, so improving food supply and reducing winter disturbance; and by reseeding some fields to provide more nutritious forage.

Ryder, John Pemberton. THE BREEDING BIOLOGY OF ROSS' GOOSE IN THE PERRY RIVER REGION, NORTHWEST TERRITORIES. *Canadian Wildl. Serv. Rep. Ser.* no. 3. 56 p., 29 figs. 1967. In English with French summ. Price 75¢. *WR 147: 90*

The following factors in the biology of Ross' goose *(Anser rossii)* are discussed: arrival dates, nest initiation, incubation, post-nuptial movements, mortality, predation, productivity, and competition.--From abstr.

Schreiber, R. Kent. RECENT SIGHTINGS OF BLUE GEESE IN WASHINGTON. *Murrelet* 53(2): 36-37. May-Aug. 1972. *WR 147: 90*

[Univ. Idaho, Moscow.] *"Chen caerulescens."*

Solomatin, A. O. [DYNAMICS OF GEESE POPULATIONS IN NORTHERN KAZAKHSTAN.] *Byull. Mosk. O-va. Ispyt. Prir. Otd. Biol.* 76(1): 89-99. 1971. [From Biol. Abstr. 54(5), 1972. In Russian with English summ.] *WR 147: 90*

Four species of *Anser* and two species of *Branta* occur in Kazakhstan, but only one of them, *A. anser* nests there.

Van Impe, J. EEN SUSHKINS GANS *ANSER NEGLECTUS* NABIJ DE GROTE PEEL. [A SUSHKIN'S BEAN GOOSE *(ANSER NEGLECTUS)* NEAR THE GROTE PEEL (NETHERLANDS).] *Limosa* 44(3/4): 102-104. 1971. [From Biol. Abstr. 54(2), 1972. In Dutch.] *WR 147: 90*

[Dr. Van De Perrelei 130, Borgerhout, Belgium.]

Yocom, Charles F. WEIGHTS AND MEASUREMENTS OF TAVERNER'S AND GREAT BASIN CANADA GEESE. *Murrelet* 53(2): 33-34. May-Aug. 1972. *WR 147: 90*

[Humboldt State Coll., Arcata, Calif.]

SHOREBIRDS, MARSH BIRDS & THEIR ALLIES

Abdulali, H. OCCURRENCE OF THE GREAT SNIPE *CAPELLA MEDIA* (LATHAM) IN BURMA AND INDIA. *J. Bombay Nat. Hist. Soc.* 67: 109-110. 1970. [From Ibis 114(3), 1972.] *WR 147: 90*

Beightol, Donald R. SONAGRAPHIC ANALYSIS OF THE AMERICAN WOODCOCK'S "PEENT" CALL AS A RESEARCH AND MANAGEMENT TOOL. *M.S. thesis, W. Va. Univ.* 62 p. 1972. *WR 147: 90*

Sonagrams of the "peent" call were shown to be useful in identifying individual male woodcock. An analysis of variance performed on the principal components revealed that variation between birds was much greater than intra-individual variation. Visual identification tests, using 65 untrained volunteers also showed that peent calls from an individual bird could be matched. Research and management implications of this technique are discussed.--Courtesy/ David E. Samuel.

Burnham, Gladys L. SOME HELMINTH PARASITES ON THE SANDHILL CRANE IN WEST TEXAS. *Southwest. Nat.* 17(2): 200-201. 15 Sept. 1972. *WR 147: 91*
[Howard County Jr. Coll., Big Springs, Tex.]

DeVore, Jon E. THE SANDHILL CRANE IN TENNESSEE. *Migrant* 43(2): 29-34. June 1972. *WR 147: 91*
[1510 Huntington Dr., Murfreesboro, Tenn.] *"Grus canadensis."*

Dobell, J. V., and H. Boyd. REPORT ON WOODCOCK HARVESTS IN CANADA, 1967-1970, AND COMPOSITION OF THE KILL IN 1970. *Canadian Wildl. Serv. Prog. Notes* no. 27. 17 p., 3 figs. June 1972. In English and French. *WR 147: 91*
"Philohela minor."

Dusi, Julian L., Rosemary T. Dusi, Darrel L. Bateman, Cathryn A. McDonald, Jeanne J. Stuart, and John F. Dismukes. ECOLOGIC IMPACTS OF WADING BIRDS ON THE AQUATIC ENVIRONMENT. *Water Resour. Res. Inst. Auburn Univ.* (Auburn, Ala.) *WRRI Bull.* no. 5. viii + 117 p., 29 figs. June 1971. *WR 147: 91*
A number of aspects of wading bird ecology and behavior were studied for their direct or indirect impact on the aquatic environment. The more important of these were: population density and distribution, movement-behavior, food habits and chemistry, fecal and excrement amounts and chemical composition, effect of droppings on plant life, effect of droppings on water chemistry, the water relations of wading birds, and aesthetic or recreational values.--From abstr.

Garavini, Ettore. CONTRIBUTO ALLO STUDIO SULLA MIGRAZIONE DELLA BECCACCIA *(SCOLOPAX RUSTICOLA)*: LA MIGRAZIONE DELLA BECCACCIA SECONDI I RISULTATI DEGLI INANELLAMENTI EFFETTUATI IN FINLANDIA, SVEZIA, NORVEGIA E RUSSIA. [THE MIGRATION OF THE WOODCOCK *(SCOLOPAX RUSTICOLA)*: THE MIGRATION PATTERN OF WOODCOCKS DERIVED FROM RINGING UNDERTAKEN IN FINLAND, SWEDEN, NORWAY AND RUSSIA.] *Riv. Ital. Ornitol.* 41(3): 137-149, illus. 1971. [From Biol. Abstr. 54(5), 1972. In Italian.] *WR 147: 91*

Gatter, W. WASSERTRANSPORT BEIM FLUSSREGENPFEIFER *(CHARADRIUS DUBIUS)*. [WATER TRANSPORT BY LITTLE RINGED PLOVERS *(CHARADRIUS DUBIUS)*.] *Vogelwelt* 92: 100-103. 1971. [From Ibis 114(3), 1972. In German with English summ.] *WR 147: 91*

Goss-Custard, J. D. FACTORS AFFECTING THE DIET AND FEEDING RATE OF THE REDSHANK *(TRINGA TOTANUS)*. *Symp. British Ecol. Soc.* 10: 101-110. 1970. [From Bird-Banding 42(4), 1971.] *WR 147: 91*

Harwin, R. M. WHITE STORK: LONGEVITY RECORD. *Ostrich* 42(1): 81. 1971. [From Bird-Banding 43(1), 1972.] *WR 147: 91*
A white stork *(Ciaonia ciaonia)* flew into an electric powerline in Karoi, Rhodesia and died subsequently on 10 November 1969 at an age of 17 years, 4 months. It had been banded as a nestling at Förstgen, West Germany (51° 18' N., 14° 40' E.) on 13 July 1952. The maximum longevity reported for this species in the wild is 19 years, 2 months.

Hausmann, Albert, and Klaus Hausmann. DIE AUSTERNFISCHER *(HAEMATOPUS OSTRALEGUS)* DER INSEL MELLUM 1971. [THE EUROPEAN OYSTERCATCHER *(HAEMATOPUS OSTRALEGUS)* ON THE ISLAND OF MELLUM (NORTH SEA) IN 1971.] *Ornithol. Mitt.* 24(5): 87-95, 2 figs. May 1972. In German with English summ. *WR 147: 91*
[Küpershof 18, Gelsenkirchen, Germany.]

Holmes, R. T. DIFFERENCES IN POPULATION DENSITY, TERRITORIALITY, AND FOOD SUPPLY OF DUNLIN ON ARCTIC AND SUBARCTIC TUNDRA. *Symp. British Ecol. Soc.* 10: 303-319. 1970. [From Bird-Banding 42(3), 1971.] *WR 147: 91*

Ivanova, N. S. [ON THE BREEDING BIOLOGY AND POSTEMBRYONAL DEVELOPMENT OF THE EUROPEAN SNIPE.] *Vestn. Leningrad. Univ.* 1970(15): 24-35. 1970. [From Bird-Banding 42(3), 1971. In Russian with English summ.] *WR 147: 91*
"Gallinago gallinago."

Kahl, M. P. OBSERVATIONS ON THE BREEDING OF STORKS IN INDIA AND CEYLON. *J. Bombay Nat. Hist. Soc.* 67: 453-461. 1970. [From Ibis 114(3), 1972.] *WR 147: 92*

Kahl, M. P. OBSERVATIONS ON THE BREEDING OF THE ABDIM'S STORK AT LAKE SHALA, ETHIOPIA. *Ostrich* 42(4): 233-241, illus. 1971. [From Biol. Abstr. 54(2), 1972.] *WR 147: 92*

[561 Rudder Road, Naples, Fla.] Results of a continuous 11-day study of the early stages of the breeding season of the Abdim's stork *Sphenorhynchus abdimii* at Lake Shala, Ethiopia are reported.

Lahrman, Fred W. A RARE OBSERVATION OF THE ESKIMO CURLEW. *Blue Jay* 30(2): 87-88. June 1972. *WR 147: 92*

[Saskatchewan Mus. Nat. Hist., Regina, Saskatchewan, Canada.] The bird was sighted at about 11:40 a.m. on Padre Island, Texas.

Miller, Richard S., George S. Hochbaum, and Daniel B. Botkin. A SIMULATION MODEL FOR THE MANAGEMENT OF SANDHILL CRANES. *Yale Univ. Sch. For. Environ. Stud. Bull.* no. 80. 49 p., 12 figs. 1972. Price $2.50, paper. *WR 147: 92*

Contains a natural history of the sandhill cranes, a description of the migratory population, and a brief management history as background for this analysis. "Currently available data do not allow the construction of models that might provide accurate predictions of population trends, but the simple models that can be created suggest that further increases in hunting might seriously endanger the species, and that the population is not being monitored accurately enough to detect a major population decline if it did occur." Management procedures and research programs to improve the data base are recommended.

Murton, R. K. THE ECOLOGY AND STATUS OF SWINHOE'S EGRET, WITH NOTES ON OTHER HERONS IN SOUTHEASTERN CHINA. *Biol. Conserv.* 4(2): 89-96, illus. 1972. [From Biol. Abstr. 54(5), 1972.] *WR 147: 92*

[Monks Wood Exp. Sta., Abbots Ripton, Huntingdon, England.] The Chinese or Swinhoe's egret *(Egretta eulophotes)* is a species that is threatened with extinction. Observations made in Hong Kong where two or three pairs nested in 1969, are detailed.

Nielsen, Bent Pors. MIGRATION AND RELATIONSHIPS OF FOUR ASIATIC PLOVERS CHARADRIINAE. *Ornis Scand.* 2(2): 137-142, illus. 1971. [From Biol. Abstr. 54 (2), 1972.] *WR 147: 92*

[Hans Knudsens Plads, Copenhagen, Denmark.] Distribution and migratory habits of four red-breasted plovers from Asia, *Charadrius leschenaultii, C. mongolus, C. asiaticus,* and *C. veredus*, are discussed.

Plesskii, P. V. [SHORE BIRDS IN THE KIROV OBLAST.] *Trudy Kirov. S-kh. Inst.* 22(52): 38-54. 1970. [From Biol. Abstr. 54(6), 1972. In Russian.] *WR 147: 92*

Twenty-seven spp. of shore birds were observed in the Kirov Oblast, out of which 15 were nesting, 10 were flying through and two had landed. Data on the phenology and biology of nesting is given for individual species.

Pratt, Helen M. NESTING SUCCESS OF GREAT BLUE HERONS AND COMMON EGRETS AT AUDUBON CANYON RANCH IN 1971. *Am. Birds* 26(4): 699-702. Aug. 1972. *WR 147: 92*

[Point Reyes Bird Observatory, Mesa Road, Bolinas, Calif.] *"Ardea herodias* and *Casmerodius albus."*

Recher, H. F., and J. A. Recher. THE FORAGING BEHAVIOUR OF THE REEF HERON. *Emu* 72(3): 85-90 + 2 pls. July 1972. *WR 147: 92*

[The Australian Mus., 6-8 College St., South Sydney, New South Wales, Australia.] Summary: The foraging behaviour of the Reef Heron *(Egretta sacra)* contains elements of hunting behaviour seen in many other species of heron. None the less, the Reef Heron relies mostly on a narrow range of techniques that minimize the problems created by the clear water and bright sunshine typical of coral reef habitats. These make fish, which are the Reef Heron's principal food,

difficult to approach and prevent the use of that classic hunting method of herons of 'stand and wait'. The particular behaviour used by a foraging Reef Heron is determined by the kind and size of prey, the conditions of the substrate and water, and the weather.

Siegfried, W. R. POPULATION DYNAMICS OF THE CATTLE EGRET. *Zool. Afr.* 6(2): 289-292. 1971. *WR 147: 93*
[Percy FitzPatrick Inst. African Ornithol. Univ. Cape Town, Cape Town, South Africa.] An examination into the cattle egret's, *Ardeola ibis*, population build-up in South Africa in relation to its reproductive output and mortality.--From summ.

Soikkeli, M. DISPERSAL OF DUNLIN *(CALIDRIS ALPINA)* IN RELATION TO SITES OF BIRTH AND BREEDING. *Ornis Fenn.* 47(1): 1-9. 1970. [From Bird-Banding 42(4), 1971.] *WR 147: 93*

Swennen, C. HET VOEDSEL VAN DE GROENPOOTRUITER *TRINGA NEBULARIA* TIJDENS HET VERBLIJF IN HET NEDERLANDSE WADDENGEBIED. [THE FOOD OF THE GREENSHANK *(TRINGA NEBULARIA)* DURING ITS STAY IN THE DUTCH WADDEN SEA AREA.] *Limosa* 44(3/4): 71-83, illus. 1971. [From Biol. Abstr. 54(2), 1972. In Dutch with English summ.] *WR 147: 93*
[Ned. Inst. Onderz. Zee, Texel, Netherlands.]

Vermeer, Kees, and David R. M. Hatch. ADDITIONAL INFORMATION ON GREAT BLUE HERON COLONIES IN MANITOBA. *Blue Jay* 30(2): 89-92, 1 fig. June 1972. *WR 147: 93*
[Canadian Wildl. Serv., Edmonton, Alberta, Canada.] *"Ardea herodias."*

Wauer, Roland H., and James F. Scudday. OCCURRENCE AND STATUS OF CERTAIN CHARADRIIFORMES IN THE TEXAS BIG BEND COUNTRY. *Southwest. Nat.* 17(2): 210-211. 15 Sept. 1972. *WR 147: 93*
[Big Bend Natl. Park, Tex.]

SEABIRDS & THEIR ALLIES

Brun, Einar. ESTABLISHMENT AND POPULATION INCREASE OF THE GANNET *SULA BASSANA* IN NORWAY. *Ornis Scand.* 3(1): 27-38, 5 figs. 1972. *WR 147: 93*
[Univ. Tromsø, Tromsø, Norway.] Abstract: The total population of Gannets in Norway in 1971 was 569 breeding pairs: 383 on Runde off Ålesund in South Norway (established 1947), 77 on Skittenskarvholmen off Mosken in the Outer Lofoten Islands (established 1960-1965), 65 on Skarvklakken off Nordmjele, Andøya (established 1967), and 44 on Innerstauren, Syltefjord, East Finnmark (established 1961). The choice of breeding localities is suggested to follow the distribution of Herring *Clupea harengus* and Capelin *Mallotus villosus*. The social stimulus from Cormorants *Phalacrocorax carbo* may have initiated the establishment of the unusual breeding sites on the islets off Mosken and Nordmjele. The population increase far exceeds the intrinsic rate of increase, and immigration of new breeding birds must have taken place in most years. These birds probably originate from Scottish colonies.

Campbell, R. Wayne. STATUS OF THE CASPIAN TERN IN BRITISH COLUMBIA. *Syesis* 4(1/2): 185-189, illus. 1971. [From Biol. Abstr. 54(4), 1972.] *WR 147: 93*
[Univ. British Columbia, Vancouver, British Columbia, Canada.] *"Hydroprogne caspia."*

Carrick, R., and D. Murray. READABLE BAND NUMBERS AND "SCOTCHLITE" COLOUR BANDS FOR THE SILVER GULL. *Australian Bird Bander* 8(3): 51-56. 1970. [From Bird-Banding 42(3), 1971.] *WR 147: 93*

Evans, R. M. IMPRINTING AND MOBILITY IN YOUNG RING-BILLED GULLS, *LARUS DELAWARENSIS*. *Anim. Behav. Monogr.* 3. p. 195-248. 1970. [From Ibis 114(3), 1972.] *WR 147: 94*

Filonov, K. P., and V. I. Lysenko. [THE NESTING OF THE SLENDER-BILLED GULL AND THE SANDWICH TERN ON THE MOLOCHNOI LIMAN.] *Biol. Nauki* 14(7): 31-33. 1971. [From Biol. Abstr. 54(2), 1972. In Russian.] *WR 147: 94*
The slender-billed gull and the sandwich tern have widened their nesting areas in the region of the northern Black Sea and have begun to nest on the Molochnoi Liman. The Liman and the nests are described, and nesting periods are given. The nesting of the sandwich tern on the Liman is fairly stable, but there are still only a small number of slender-billed gulls.

Gloe, P. BESIEDLUNG DER INSEL HELMSAND DURCH DIE LACHMOWE *(LARUS RIDIBUNDUS)* UND IHR EINDRINGEN IN DIE BRUTPLATZE DER FLUSS-UND KUSTENSEESCHWALBEN *(STERNA HIRUNDO ET ST. PARADISAEA)*. [COLONIZATION ON THE ISLAND OF HELMSAND OF BLACK-HEADED GULLS *(LARUS RIDIBUNDUS)* AND THEIR INVASION INTO THE BREEDING TERRITORY OF *STERNA HIRUNDO* AND *S. PARADISAEA*.] *Corax* 3: 176-183. 1971. [From Ibis 114 (3), 1972. In German.] *WR 147: 94*

Grant, P. R., and D. N. Nettleship. NESTING HABITAT SELECTION BY PUFFINS *FRATERCULA ARCTICA* L. IN ICELAND. *Ornis Scand.* 2(2): 81-87, illus. 1971. [From Biol. Abstr. 54(2), 1972.] *WR 147: 94*
[Anim. Ecol. Res. Group, South Parks Road, Oxford, England.] The distribution of puffin nest burrows was studied above and below the cliff face at Vik i Myrdal, Iceland. Four study plots were established, one above and three below the cliff. Multiple linear regression analysis showed that burrow density was negatively correlated with distance from the cliff edge above the cliff, and was positively correlated with the perimeter of boulders at each of the three study plots below the cliff. The biological significance of these correlations is considered to be that the cliff edge above the cliff, and boulders below it, serve as a landmark function, facilitating rapid detection of the burrow entrance by the puffin. This is important in the presence of skuas and gulls, which rob the puffin of the food it brings to the burrow for its chick. Other factors which might limit the spread of puffin burrows in adjacent habitat are predation and soil conditions.

Gress, Franklin. REPRODUCTIVE STATUS OF THE CALIFORNIA BROWN PELICAN IN 1970, WITH NOTES ON BREEDING BIOLOGY AND NATURAL HISTORY. *Calif. Dep. Fish Game Wildl. Manage. Adm. Rep.* no. 70-6. 21 p., illus. July 1970. *WR 147: 94*
Abstract: Recent evidence of reproductive failures of the brown pelican *(Pelecanus occidentalis californicus)* in California prompted a study of the Anacapa Island population in 1970. From February to August reproductive success and breeding biology were studied. There were 552 nesting attempts in two colonies established on Anacapa in 1970, with but one young produced. Reproductive failure was attributed to thin eggshells which collapsed during incubation. Aberrant behavior associated with reproduction was also observed. In a survey of all traditional breeding sites in California, no other nesting was reported. Thus, in the State of California, only one young pelican was hatched in 1970. Double-crested cormorants nesting on Anacapa suffered the same fate as the pelicans. In at least 50 nesting attempts, only one nest producing three young cormorants was successful.

Guiguet, Charles J. A LIST OF SEA BIRD NESTING SITES IN BARKLEY SOUND, BRITISH COLUMBIA. *Syesis* 4(1/2): 253-259. 1971. [From Biol. Abstr. 54(4), 1972.] *WR 147: 94*
[British Columbia Prov. Mus., Victoria, British Columbia, Canada.] Fifty-five of approximately 155 islands, islets, and reefs were visited. Nesting sites of 6 spp. of "sea" birds, most of them previously unrecorded, are listed. Species are fork-tailed petrel, *Oceanodroma furcata*; boreal petrel, *O. leucorhoa*; Brandt cormorant, *P. pelagicus*; glaucous-winged gull, *Larus glaucescens*; pigeon

guillemot, *Cephus columba*; Cassin auklet, *Ptychoramphus aleuticus*; rhinoceros auklet, *Cerorhinca monocerata*; and tufted puffin, *Lunda cirrhata*. Seaborne breeding concentrations of marbled murrelet, *Brachyramphus marmoratus*, are given.

Hatch, David R. M. BREEDING STATUS OF THE FORSTER'S TERN IN MANITOBA. *Blue Jay* 30(2): 102-104, illus. June 1972. *WR 147: 95*
[Manitoba Mus. Man & Nat., 190 Rupert Ave., Winnipeg, Manitoba, Canada.] *"Sterna forsteri."*

Kinsella, John M. HELMINTH PARASITES OF THE BLACK SKIMMER, *RYNCHOPS NIGRA*, FROM LAKE OKEECHOBEE, FLORIDA. *J. Parasitol.* 58(4): 780. Aug. 1972. *WR 147: 95*
[Univ. Fla., Gainesville.]

Lina, P. H. C. OBSERVATIONS ON THE INFECTION OF YOUNG HERRING AND LESSER BLACK-BACKED GULLS BY ECTOPARASITES. *Ardea* 58(3/4): 258-261. 1970. [From Biol. Abstr. 54(6), 1972. In English with Dutch summ.] *WR 147: 95*
[Ringing Sta. Meyendel, Wassenaar, Netherlands.] *"Larus ridibundus, L. argentatus,* and *L. fuscus graellsii."*

Magno, Salvador. FAMILIA LARIDAE: GAVIOTAS Y GAVIOTINES. [THE FAMILY LARIDAE: GULLS AND TERNS.] *Hornero* 11(2): 65-84, illus. 1971. [From Biol. Abstr. 54(3), 1972. In Spanish.] *WR 147: 95*
[Asoc. Ornitol. Plata, Buenos Aires, Argentina.]

Manikowski, Stanislaw. THE INFLUENCE OF METEOROLOGICAL FACTORS ON THE BEHAVIOUR OF SEA BIRDS. *Acta Zool. Cracov.* 16(13): 581-667, illus. 1971. [From Biol. Abstr. 54(5), 1972. In English with Polish and Russian summ.] *WR 147: 95*
[Zakl. Zool. Sygt., Dows., Pol. Akad. Nauk, Cracov, Poland.] The study was carried out from aboard fishing trawlers in the Atlantic, in the region of Labrador and Newfoundland, north-western Africa, and in the North Sea. Relationships were shown of the changes in the numbers of birds with the geographical position, the presence of other trawlers in the fishery and the weather changes. The sea birds anticipate unfavorable weather conditions by migrating to other sea areas.

Merilees, W. J. LONGEVITY OF DOMINICAN GULLS. *Australian Bird Bander* 7(3): 60-61. 1969. [From Bird-Banding 42(3), 1971.] *WR 147: 95*
The oldest *Larus dominicanus* was more than 13 years.

Meyer, Marvin C. THE PATTERN OF CIRCULATION OF *DIPHYLLOBOTHRIUM SEBAGO* (CESTODA: PSEUDOPHYLLIDEA) IN AN ENZOOTIC AREA. *J. Wildl. Dis.* 8(3): 215-220, 1 fig. July 1972. *WR 147: 95*
[Univ. Maine, Orono.] In the Rangeley Lakes region of western Maine, where *Diphyllobothrium sebago* is enzootic, the spawning of the smelt *(Osmerus mordax)* in late April and early May and the ensuing die-off of the spent fish coincide with the return and reproductive activities of the gulls *(Larus argentatus)*. The gulls feed on the dead plerocercoid-infected smelt, which results in a high infection during the late spring and early summer.--From abstr.

Mystrom, Mats. TRANSITIVITY OF COLOUR PREFERENCES IN YOUNG HERRING GULLS, *LARUS ARGENTATUS* (L.). *Forma Functio* 5(1): 89-96, illus. 1972. [From Biol. Abstr. 54(5), 1972. In English with German and French summ.] *WR 147: 95*
[Lund Univ., Lund, Sweden.]

Nazarov, Y. N., and Z. B. Smetanina. [INFORMATION ON THE FEEDING OF THE BLACK-TAILED GULL *(LARUS CRASSIROSTRIS* VIEILL*)* ON THE ISLAND BOL'SHOI PELIS.] *Uch. Zap. Dal'nevost Univ.* 16: 92-95. 1970. [From Biol. Abstr. 54(6), 1972, from Ref. Zh. Biol., 1971, no. 7I442. In Russian.] *WR 147: 95*
The stomach contents of 42 black-tailed gulls captured in April-May and Sept. 1966 in the Gulf of Peter the Great (southern Maritime Province) were analyzed. In the spring the gulls ate mainly Cephalopoda. Insects and crustaceans were often found in their food. In the autumn insects were the main food. Evidently the black-tailed gull does not have specialized food and catches the most accessible food first.

Nettleship, David N. BREEDING SUCCESS OF THE COMMON PUFFIN *(FRATERCULA ARCTICA* L.) ON DIFFERENT HABITATS AT GREAT ISLAND, NEWFOUNDLAND. *Ecol. Monog.* 42(2): 239-268, 12 figs. Spring 1972. *WR 147: 96*

[Canadian Wildl. Serv., 2721 Highway 31, Ottawa, Ontario, Canada.] Nesting success was higher near the edge of a cliff than on nearby level habitat, chiefly because adult puffins on the cliff could make a quicker escape from gulls and thus avoid being robbed of food being brought to their young. Breeding pairs were unable to rear two young to fledging, and one parent alone could not rear one young.--Courtesy/ Paul A. Stewart.

Osborne, Timothy. SURVEY OF SEABIRD USE OF THE COASTAL ROCKS OF NORTHERN CALIFORNIA FROM CAPE MENDOCINO TO THE OREGON LINE. *Calif. Dep. Fish Game Wildl. Manage. Adm. Rep.* no. 71-4. iv + 36 p. Jan. 1971. *WR 147: 96*

Twelve nesting species were identified and an account was made of 43,666 nesting pairs of seabirds on 34 sites.--From abstr.

Osborne, Timothy, and Jack G. Reynolds. CALIFORNIA SEABIRD BREEDING GROUND SURVEY 1969-70. *Calif. Dep. Fish Game Wildl. Manage. Adm. Rep.* no. 71-3. 9 p. Jan. 1971. *WR 147: 96*

One hundred and thirty-three thousand pairs of seabirds of 13 species were found to be nesting on 37 major rookeries located on offshore rocks. Eighty-two other rocks were classified as minor rookeries and nonbreeding roosting sites. Excluded from the study were offshore islands and coastal headlands.--From abstr.

Penhale, Leonard B. REPRODUCTIVE FAILURE OF PELAGIC CORMORANT, SAN LUIS OBISPO COUNTY, CALIFORNIA, 1970. *Calif. Fish Game* 58(3): 238. July 1972. *WR 147: 96*

"Phalacrocorax pelagicus."

Pence, Danny B., and George E. Childs. PATHOLOGY OF *AMPHIMERUS ELONGATUS* (DIGENEA: OPISTHORCHIIDAE) IN THE LIVER OF THE DOUBLE-CRESTED CORMORANT. *J. Wildl. Dis.* 8(3): 221-224, 2 figs. July 1972. *WR 147: 96*

[La. State Univ. Med. Cent., New Orleans.] *"Phalacrocorax auritus."*

Pourtois, A. UN CAS ORIGINAL DE NIDIFICATION D'UN COUPLE DE GOELANDS CENDRES *(LARUS CANUS)* IN HAINAUT. [AN ORIGINAL CASE OF NIDIFICATION OF A PAIR OF GULLS *(LARUS CANUS)* IN THE HAINAUT REGION (BELGIUM).] *Aves* 8(2): 29-36, illus. 1971. [From Biol. Abstr. 54(3), 1972. In French.] *WR 147: 96*

[Ferme Petit Rigneau, Rouberoy, Belgium.]

Shuntov, V. P. [MARINE BIRDS IN OPEN WATERS OF THE EAST CHINA SEA.] *Ekologiya* 1(4): 47-54, illus. 1970. [From Biol. Abstr. 54(5), 1972. In Russian.] *WR 147: 96*

[Pac. Res. Inst. Mar. Fish Oceanogr., Far East Siberia Branch Acad. Sci. USSR, Vladivostok, USSR.]

Soikkeli, M. MORTALITY RATE OF FINNISH CASPIAN TERNS *(HYDROPROGNE CASPICA). Ornis Fenn.* 47(4): 177-179. 1970. [From Bird-Banding 42(4), 1971.] *WR 147: 96*

Thomas, G. J. A REVIEW OF GULL DAMAGE AND MANAGEMENT METHODS AT NATURE RESERVES. *Biol. Conserv.* 4(2): 117-127, illus. 1972. [From Biol. Abstr. 54 (5), 1972.] *WR 147: 96*

[Roy. Soc. Prot. Birds, Sandy, Bedfordshire, England.] The control of small numbers of gulls can usually be effected by shooting or trapping. Where gulls nest in areas with few other species present, employment of narcotics or poisons seem to be the most practicable methods of control, if necessary. When gulls nest in close association with other birds, these methods may not be applicable, and so other, less direct, methods of control may have to be used. If the area is able to be visited frequently, eggs and nests could continually be removed; but if only infrequent visits can be made, then infecting the gulls' eggs with a preservative (formalin) seems a good method of control. These methods of control may take several years to reduce a gull population. There is no record of an effective method for reducing gull populations over large areas.

Williams, Lovett. PELICAN'S PROGRESS. *Fla. Wildl.* 26(4): 4-6, illus. Sept. 1972. *WR 147: 97*
"A region-by-region rundown on the most recent information, obtained in 1972, about the status of the brown pelican *(Pelicanus occidentalis)*."

HAWKS & OWLS

Barbu, Profira. SOBECARUL INCALTAT *(BUTEO LAGOPUS LAGOPUS* PONT.): PASARE FOLOSITOARE. [THE ROUGH-LEGGED BUZZARD *(BUTEO LAGOPUS LAGOPUS* PONT.): A USEFUL BIRD.] *Ocrotirea Nat.* 15(1): 61-66, illus. 1971. [From Biol. Abstr. 54(3), 1972. In Romanian with French summ.] *WR 147: 97*
[Fac. Biol., Lab. Zool., Bucharest, Romania.] Analysis of 165 pellets.

Barbu, Profira, and Constantina Sorescu. CONTRIBUTIONS CONCERNANT LA NOURRITURE DE LA CHOUETTE *(ATHENE NOCTUA NOCTUA* SCOP.). [CONTRIBUTIONS CONCERNING THE DIET OF THE TAWNY OWL *(ATHENE NOCTUA NOCTUA* SCOP.).] *An. Univ. Bucur. Biol. Anim.* 19. p. 67-72. 1970. [From Biol. Abstr. 54(5), 1972. In French.] *WR 147: 97*
[Univ. Bucharest, Bucharest, Romania.] The diet of the tawny owl in Craiova, Romania is composed of small mammals, birds, and many insects. In winter, the diet consists of mammals and birds with the dominant ones being the same ones that are dominant in summer: *Apodemus sylvaticus, Mus musculus,* and *Passer domesticus.* Insectivores also occupied an important place in the diet, especially *Crocidura suaveolens.* In summer, the percentage of mammals consumed was close to that of birds. By destroying a large number of rodents and harmful insects and by regulating the number of sparrows each year, *A. noctua* is important in biological control and should be protected.

Benson, C. W., and Michael P. Stuart Irwin. VARIATION IN TARSAL AND OTHER MEASUREMENTS IN *OTIS DENHAMI*, WITH SOME DISTRIBUTIONAL NOTES. *Bull. British Ornithol. Club* 92(3,4): 70-77. June-Aug. 1972. *WR 147: 97*

Clark, Richard J. PELLETS OF THE SHORT-EARED OWL AND MARSH HAWK COMPARED. *J. Wildl. Manage.* 36(3): 962-964, 2 figs. July 1972. *WR 147: 97*
[5101 Darlington Rd., York, Pa.] Abstract: Twenty-four pellets each from wintering short-eared owls *(Asio flammeus)* and marsh hawks *(Circus cyaneus hudsonius)* were statistically compared. Considerably less osseous material was found to comprise the hawk pellets (17 percent of the total by weight) than the owl pellets (44 percent).

Dobrokhotov, B., and D. Litvin. [RADIOACTIVITY OF KESTREL PELLETS EJECTED AFTER FEEDING ON MICE CONTAINING P^{32}.] *Zool. Zh.* 50(10): 1591-1592. 1971. [From Bird-Banding 43(1), 1972. In Russian.] *WR 147: 97*
"Falco tinnunculus."

Frylestam, Bo. ÜBER WANDERUNGEN UND STERBLICHKEIT BERINGTER SKANDINAVISCHER SCHLEIEREULEN *TYTO ALBA*. [MOVEMENTS AND MORTALITY OF BANDED BARN OWLS *TYTO ALBA* IN SCANDINAVIA.] *Ornis Scand.* 3(1): 45-54, 8 figs. 1972. In German with English abstr. *WR 147: 97*
[Univ. Lund, Lund, Sweden.] Abstract: Altogether 155 recoveries of ringed Scandinavian Barn Owls were obtained and analysed. In general the birds, particularly the first-year birds, remained within a relatively confined area, the majority of the recoveries being obtained less than 20 km from the site of release. The fledged birds dispersed in all directions, and sibling birds showed no tendency to keep company. Certain topographic features, especially large water bodies, restricted the dispersal of the birds. Movements between the mainlands and islands were therefore rare. On the basis of recoveries of dead animals it was established that mortality in Barn Owls was high during the first year. For birds not surviving until their second summer (75%), the average length of life was 4.5-5.3 months. The losses were greatest during November-February, when the commonest cause of death was lack of food associated with low temperature and snow cover.

Garber, David P. OSPREY STUDY LASSEN AND PLUMAS COUNTIES, CALIFORNIA 1970-1971. *Calif. Dep. Fish Game, Wildl. Manage. Adm. Rep.* no. 72-1. 33 p., 8 figs. Jan. 1972. *WR 147: 98*

During the 1970 and 1971 breeding seasons 98 pairs of nesting ospreys *(Pandion haliaetus)* were studied.

Gargett, Valerie. OBSERVATIONS AT A BLACK EAGLE NEST IN THE MATOPOS, RHODESIA. *Ostrich* 43. p. 77-108, 7 figs. 1972. *WR 147: 98*

[49 Leander Ave., Hillside, Bulawayo, Rhodesia.] A black eagle's *(Aquila verreauxi)* nest in the Matopos Survey Area was observed for 582 hours from 3 February to 22 December 1970. Calls, display flights and intra- and inter-specific contacts are described. The first egg was laid before 21 April on which day it was found destroyed by a predator. The second egg laid between 21 and 24 April did not hatch. The third egg, laying date unknown, hatched on 11 June. This is the first record of the black eagle laying three consecutive eggs.--From summ.

Glue, David E. BIRD PREY TAKEN BY BRITISH OWLS. *Bird Study* 19(2): 91-95 + 3 pls. June 1972. *WR 147: 98*

[British Trust for Ornithol., Beech Grove, Tring, Hertfordshire, England.] The importance of birds in the diet of British owls varies considerably. Long-eared owl *(Asio otus)* and tawny owl *(Strix aluco)* are the two main bird eaters. Little owl *(Athene noctua)* and short-eared owl *(Asio flammeus)* will take birds in some quantity on occasions, usually in the breeding season and winter quarters respectively.--From summ.

Harmata, Wincenty. WYSTEPOWANIE PTAKÓW DRAPIEŻNYCH *(FALCONIFORMES)* W NIEKTÓRYCH OKOLICACH WOJEWÓDZTWA KRAKOWSKIEGO I ZAGADNIENIA ICH OCHRONY. [THE OCCURRENCE OF BIRDS OF PREY *(FALCONIFORMES)* IN CERTAIN AREAS OF THE KRAKÓW DISTRICT, AND PROBLEMS OF THEIR CONSERVATION.] *Ochr. Przyr.* 36: 287-308, 1 fig. 1971. In Polish with English summ. *WR 147: 98*

[Jagellonian Univ., Kraków, Poland.] In the province of Kraków, Poland there are 26 spp. of birds of prey of the 34 spp. recorded in Poland. All the birds of prey in the province of Kraków are to a greater or lesser extent threatened with danger. The most important limiting factors on the bird of prey population are: too much shooting, the changing habitats, tree-felling and lessening of wooded areas, and the disturbance caused to birds of prey by people visiting the areas concerned during the breeding season.--From summ.

Hart, John. FOOD HABITS OF AMERICAN KESTRELS IN A LOW VOLE YEAR. *Raptor Res.* 6(1): 1-3, 2 figs. Spring 1972. *WR 147: 98*

[309 E. 2nd Street, Morris, Minn.] "It is clear that kestrel production was not depressed by the vole low of 1971, and it appears that the falcons compensated for a paucity of microtine prey by taking more birds and insects."

Ilicher, V., V. Voronetskii, and T. Golubeva. [THE SONAR MEDIUM OF THE LONG EARED OWL *(ASIO OTUS)*, AND THE SPECTRAL SENSITIVITY OF ITS AUDITORY NERVES.] *Zool. Zh.* 50(9): 1358-1368. 1971. [From Bird-Banding 43(1), 1972. In Russian with English summ.] *WR 147: 98*

Kilham, Lawrence. CATERWAULING OF THE BARRED OWL: A SPECULATION. *N.H. Audubon Quart.* 25(3): 93-94. Summer 1972. *WR 147: 98*

[Dartmouth Coll., Hanover, N.H.] *"Strix varia."*

Mallette, Robert D. RESULTS OF CALIFORNIA CONDOR BAITING EFFORT 1967-1969. *Calif. Dep. Fish Game Wildl. Manage. Adm. Rep.* no. 71-6. 7 p. July 1971. *WR 147: 98*

The availability of other food sources greatly influenced the effectiveness of a baiting program even in areas of known condor *(Gymnogyps californianus)* concentrations. Prolonged baiting will be required to condition birds to feed at bait stations regularly.--From abstr.

Maser, Chris, and E. Wayne Hammer. A NOTE ON THE FOOD HABITS OF BARN OWLS IN KLAMATH COUNTY, OREGON. *Murrelet* 53(2): 28. May-Aug. 1972. *WR 147: 99*
[Univ. Puget Sound, Tacoma, Wash.]

Medway, Lord, and Yong Ghong Chong. BARN OWL PELLETS FROM KULAI, JOHORE. *Malayan Nat. J.* 23: 171-172. 1970. [From Ibis 114(3), 1972.] *WR 147: 99*

Mikkola, Heimo. ZUR ERNAEHRUNG DER SPERBEREULE *(SURNIA ULULA)* ZUR BRUTZEIT. [ON THE FOOD OF THE SPARROW OWL DURING THE BREEDING PERIOD.] *Angew. Ornithol.* 3(4): 133-141, illus. 1970/1971. [From Biol. Abstr. 54(2), 1972. In German.] *WR 147: 99*
[Univ. Oulu, Oulu, Finland.] Abstract: The food of the hawk owl during the nesting period in Finland was determined from droppings collected in the area of the nest. Of 563 spp. of prey identified 98% were mammals and 1.6% were birds. Remnants of fish bones were observed in one pellet. *Microtus (agrestis, oeconomus)*, and *Clethrionomys (glareola, rufocanus, rutilis)* dominated. Differences in the food animals in Lapland, central Finland and southern Finland are reported. Comparisons are made with the food animals of *Asio flammeus* and *Strix nebulosa*.

Mollhagen, Tony R., Robert W. Wiley, and Robert L. Packard. PREY REMAINS IN GOLDEN EAGLE NESTS: TEXAS AND NEW MEXICO. *J. Wildl. Manage.* 36(3): 784-792, 3 figs. July 1972. *WR 147: 99*
[Tex. Tech Univ., Lubbock.] Abstract: Remains of prey in 41 golden eagle *(Aquila chrysaetos)* nests were studied in sheep- and goat-raising areas of western Texas and New Mexico in 1968. Bones of black-tailed jack rabbits *(Lepus californicus)*, cottontails *(Sylvilagus audubonii* and *S. floridanus)*, rock squirrels *(Spermophilus variegatus)*, and prairie dogs *(Cynomys ludovicianus* and *C. gunnisoni)* comprised nearly 90 percent of all individuals found in nests. A greater portion of individual rock squirrels and prairie dogs were eaten than of rabbits. Seventy percent of all nests contained remains of at least 66 sheep and goats, most of which were young. Of the nests containing livestock, 15 each had one sheep or goat; only two each had five or more. It could not be ascertained from the bony remains in nests whether prey species were brought to the nest as carrion or as fresh-kills. Sampling bias and other food habit considerations are discussed.

Nelson, R. Wayne. THE INCUBATION PERIOD IN PEALE'S FALCONS. *Raptor Res.* 6 (1): 11-15. Spring 1972. *WR 147: 99*
[Univ. Calgary, Calgary, Alberta, Canada.] Abstract: Based on observations of three clutches of *Falco peregrinus pealei* eggs in the wild, the period of time from the laying of the last egg until the essentially synchronous hatching of the young is about 32 to 34 days, but may be as long as 35 days. Observations by others on captive Peale's Falcons suggest similar or slightly longer incubation periods. The 28 to 29 day interval mentioned in the literature for Peregrines does not apply to *F. p. pealei* and probably does not apply to a number of other subspecies of the Peregrine.

Olendorff, Richard R. COMMENTS ON REARING YOUNG BUTEOS. *Raptor Res.* 6(11): 6-10. Spring 1972. *WR 147: 99*
[3317 Olympus Dr., Bremerton, Wash.] *"Buteo swainsonii, B. jamaicensis,* and *B. regalis."*

Patty, Richard E. SUSCEPTIBILITY OF PRIMARY CELL CULTURES TO FOOT-AND-MOUTH DISEASE VIRUS: EFFECT OF EAGLE'S NONESSENTIAL AMINO ACIDS. *Am. J. Vet. Res.* 33 (10): 2081-2083. Oct. 1972. *WR 147: 99*
[Del. State Coll., Dover.]

Pennycuick, C. J. CONTROL OF GLIDING ANGLE IN RUPPELL'S GRIFFON VULTURE *GYPS RUPPELLII*. *J. Exp. Biol.* 55: 39-46. 1971. [From Ibis 114(3), 1972.] *WR 147: 99*

Rees, Chris. SOME NOTES ON NESTING GREAT HORNED OWLS. *Blue Jay* 30(2): 98-100. June 1972. *WR 147: 100*
[No. 2 - 13027-83 St., Edmonton, Alberta, Canada.] Nesting behavior is described.

Reese, Jan G. OSPREY NESTING SUCCESS ALONG THE CHOPTANK RIVER, MARYLAND. *Chesapeake Sci.* 13(2): 233-235, 1 fig. Sept. 1972. *WR 147: 100*
[St. Michaels, Md.] Abstract: Nesting success of ospreys along the Choptank River, Maryland, was studied from 1968 through 1971. A total of 96 nesting attempts was observed; 86 of these were accessible for study. In the accessible nests, 80 young were fledged for an average of .93 young per nest. This average is among the best in the country, but slightly below that estimated for population stability. Known causes for loss of nests, eggs, and young are documented. Nesting success is compared with other osprey populations in the United States.

Seibel, D. THE MISSISSIPPI KITE *(ICTINIA MISISIPPIENSIS). Kans. Ornithol. Soc. Bull.* 22(1): 6-7. 1971. [From Bird-Banding 42(4), 1971.] *WR 147: 100*

Smith, Dwight G., and Joseph R. Murphy. UNUSUAL CAUSES OF RAPTOR MORTALITY. *Raptor Res.* 6(1): 4-5. Spring 1972. *WR 147: 100*
[Brigham Young Univ., Provo, Utah.]

Solomatin, A. O. [FEEDING OF IMPERIAL EAGLES IN THE NAURZUM PRESERVE.] *Ekologiya* 1(3): 78-80. 1970. [From Biol. Abstr. 54(4), 1972. In Russian.] *WR 147: 100*
"Aquila heliaca heliaca."

Sulkava, P., and S. Sulkava. DIE NISTZEITLICHE NAHRUNG RAUCHFUSSKAUZES, *AEGOLIUS FUNEREUS*, IN FINNLAND 1958-67. [THE BREEDING SEASON FOOD HABITS OF TENGMALM'S OWL *(AEGOLIUS FUNEREUS)* IN FINLAND, 1958-67.] *Ornis Fenn.* 48: 117-124. 1971. [From Ibis 114(3), 1972. In German with English summ.] *WR 147: 100*

Tubbs, C. R. ANALYSIS OF NEST RECORD CARDS FOR THE BUZZARD. *Bird Study* 19 (2): 96-104, 3 figs. June 1972. *WR 147: 100*
[The Nature Conservancy, Shrubbs Hill Road, Lyndhurst, Hampshire, England.] *"Buteo buteo."*

Vaucher, C. A. NOTES SUR L'ÉTHOLOGIE DE L'AIGLE DE BONELLI. [NOTES ON THE ETHOLOGY OF BONELLI'S EAGLE.] *Nos Oiseaux* 31: 101-111. 1971. [From Ibis 114 (3), 1972. In French.] *WR 147: 100*
Observations on Bonelli's eagle *Hieraaetus fasciatus* in France and Spain, its relations with other raptors, eagle owl *Bubo bubo*, crows and some of its prey species.

Walley, William J. FIRST RECORD OF THE LONG-EARED OWL IN RIDING MOUNTAIN NATIONAL PARK. *Blue Jay* 30(2): 101. June 1972. *WR 147: 100*
[Dauphin Regional Comprehensive Secondary School, Dauphin, Manitoba, Canada.] *"Asio otus."*

Wilson, Vivian J. NOTES ON *OTIS DENHAMI JACKSONI* FROM THE NYIKA PLATEAU. *Bull. British Ornithol. Club* 92(3,4): 77-81. June-Aug. 1972. *WR 147: 100*

Zimmerman, David R. THE PEREGRINE / AMERICA'S MOST ENDANGERED FALCON. *Nat. Parks Conserv. Mag.* 46(9): 4-9, illus. Sept. 1972. *WR 147: 100*
"Falco peregrinus." One of a series on endangered species.

Alsager, Dale E., J. B. Stenrue, and Rex L. Boyles. CAPTURING BLACK-BILLED MAGPIES WITH CIRCULAR LIVE TRAPS. *J. Wildl. Manage.* 36(3): 981-983, 1 fig. July 1972. *WR 147: 101*

[Alberta Dep. Agric., Edmonton, Alberta, Canada.] Abstract: A unique, circular, lightweight trap proved, in three years of testing, to be more efficient in capturing black-billed magpies *(Pica pica)* than conventional square traps, because magpies are reluctant to round corners. The trap is economical to build. Baiting the trap in advance of setting adds to the efficiency.

Berthold, P. EXPERIMENTELLE UNTERSUCHUNG VON ZWILLINGSARTEN: ÜBER FORTPFLANZUNGSVERHALTEN UND BRUT VON *STURNUS UNICOLOR/VULGARIS*-MISCHPAAREN. [EXPERIMENTAL INVESTIGATIONS OF PAIRED SPECIES: ON THE REPRODUCTIVE BEHAVIOR AND BROOD OF *STURNUS UNICOLOR/VULGARIS* MIXED PAIRS.] *Vogelwelt* 92: 141-147. 1971. [From Ibis 114(3), 1972. In German with English summ.] *WR 147: 101*

Folk, Cestmir, and Miroslava Beklova. DIE WINTERERNAHRUNG DER SAATKRAHE *(CORVUS FRUGILEGUS* L.) IM STAEDTISCHEN MILIEU. [THE WINTER FOOD OF THE ROOK *(CORVUS FRUGILEGUS* L.) IN A CITY ENVIRONMENT.] *Zool. Listy* 20(4): 357-363. 1971. [From Biol. Abstr. 54(3), 1972. In German with English summ.] *WR 147: 101*

[Czechoslovak Acad. Sci. Kvetna 8, Brno, Czechoslovakia.]

Holyoak, David. FOOD OF THE ROOK IN BRITAIN. *Bird Study* 19(2): 59-68, 2 figs. June 1972. *WR 147: 101*

[59 Hersham Road, Walton on Thames, Surrey, England.] Summary of the results of a study of the food of the rook *(Corvus frugilegus)* which was a part of the Rook Investigation carried out by the British Trust for Ornithology from 1943 to 1946.

Jones, Robert E., and Kenneth E. Hungerford. EVALUATION OF NESTING COVER AS PROTECTION FROM MAGPIE PREDATION. *J. Wildl. Manage.* 36(3): 727-732. July 1972. *WR 147: 101*

[Delta Waterfowl Res. Sta., Delta, Manitoba, Canada.] Abstract: Protection offered by nesting cover was evaluated by studying 529 simulated nests placed in nine vegetative covers. Of these nests, 278 were destroyed in the 10-day test period. Twenty-five percent of these simulated nests were destroyed the first 24-hour period, and 36 percent remained intact throughout the full test period. Grain fields, cat-tail *(Typha angustifolia)*, bulrush *(Scirpus acutus* and *S. validus)*, and irrigation ditch vegetation provided more protection (30 percent destroyed), than tall weeds, willows *(Salix exigua* and *S. lasiandra)*, sagebrush *(Artemisia tridentata)*, or downy chess *(Bromus tectorum)* (80 percent destroyed). Alfalfa *(Medicago sativa)* provided a moderate amount of protection (40 percent destroyed). The black-billed magpie *(Pica pica hudsonia)* was found to be the most important nest predator on the Wilson Lake study area. A cover index that evaluated the visibility of eggs from all four sides and the top showed that heavier covers were more protective than light ones.

Looft, V. DIE NAHRUNG DES KOLKRABEN *(CORVUS CORAX)* IM LANDESTEIL SCHLESWIG NACH EINER ANALYSE VON GEWOLLEN. [THE FOOD HABITS OF THE RAVEN *(CORVUS CORAX)* IN SCHLESWIG-HOLSTEIN.] *Corax* 3: 196-199. 1971. [From Ibis 114(3), 1972. In German.] *WR 147: 101*

Rats and mice formed 75% of the diet of nesting ravens in Schleswig-Holstein.

Malmberg, Torsten. CENSUSES OF THE ROOK *CORVUS FRUGILEGUS* L. IN SCANIA, SWEDEN, 1955-1970. *Ornis Scand.* 2(2): 89-117, illus. 1971. [From Biol. Abstr. 54(2), 1972.] *WR 147: 101*

[Univ. Lund, Lund, Sweden.]

Mott, Donald F., Richard R. West, John W. DeGrazio, and Joseph L. Guarino. FOODS OF THE RED-WINGED BLACKBIRD IN BROWN COUNTY, SOUTH DAKOTA. *J. Wildl. Manage.* 36(3): 983-987. July 1972. *WR 147: 102*

[Denver Wildl. Res. Cent., Denver, Colo.] Abstract: An analysis of the gizzard contents of 702 red-winged blackbirds *(Agelaius phoeniceus)* collected from 1959 through 1965 during the spring, summer, and early fall in northeastern South Dakota showed that a weed seed, bristle grass *(Setaria* spp.*)*, occurred most frequently (68 percent of the gizzards) and in the largest quantity (23 percent of the volume). Corn *(Zea mays)* was eaten more frequently (30 percent) and in larger amounts (11 percent) than all other cultivated grains. Oats *(Avena sativa)*, wheat *(Triticum aestivum)*, and millet *(Panicum miliaceum)* made up most of the remaining plant food consumed. Animal matter, mostly beetles (Coleoptera), contributed 25 percent of the total volume eaten, with the greatest incidence and volume (96 and 45 percent) being recorded during the nesting period. Grit accounted for 14 percent of the volume eaten.

Oelke, Hans, and Peter H. Klopfer. LICHT ALS STIMULATIONSFAKTOR IN DER BIOTOPWAHL VON KATZENDROSSELN *(DUMETELLA CAROLINENSIS*, MIMIDAE*)*. [LIGHT AS A STIMULUS-FACTOR IN THE SELECTION OF BIOTOPES BY CATBIRDS *(DUMETELLA CAROLINENSIS*, MIMIDAE*)*.] *J. Ornithol.* 111(3/4): 357-361. 1970. In German with English summ. *WR 147: 102*

Summary: Lab. studies on habitat selection by Catbirds *(Dumetella carolinensis)*, show different intensities of light to be of considerably less importance than foliage size and shape. The data also support the notion that insular (Bermuda) specimens of *Dumetella carolinensis* have broader niches (are less sterotyped) than their mainland conspecifics.

Richmond, Merle L. DUPED BY A RAVEN. *Colo. Field Ornithol.* no. 12. p. 15. June 1972. *WR 147: 102*

[Bur. Sport Fish. & Wildl., Denver, Colo.] Behavior of *(Corvus corax)*.

Robertson, Raleigh J. OPTIMAL NICHE SPACE OF THE REDWINGED BLACKBIRD *(AGELAIUS PHOENICEUS)*: I. NESTING SUCCESS IN MARSH AND UPLAND HABITAT. *Canadian J. Zool.* 50(2): 247-263, illus. 1972. [From Biol. Abstr. 54(2), 1972. In English with French summ.] *WR 147: 102*

[Queen's Univ., Kingston, Ontario, Canada.] Survival value of different parts of the fundamental niche of the redwinged blackbird was determined by comparing nesting success in marsh and upland habitats. Marsh nesting populations had greater success than those in uplands because of a smaller proportion of nests destroyed by predators. Predation pressure in marshes was negatively correlated with the depth of water beneath the nest, and the synchrony and density of nesting in marshes in some cases has a swamping effect on local predator populations. The structure and phenology of marsh compared with upland vegetation is an important factor in determining nesting density and synchrony. Growth rates of nestlings and weight at fledging are similar between habitats. Genetic separation between marsh and upland populations is unlikely. Territoriality probably results in a limitation to breeding density in both habitats. The results support the hypothesis that where sympatric, redwings are excluded from their optimal niche space by yellowheaded blackbirds.--From summ.

Schafer, Edward W., Jr., and Donald J. Cunningham. AN EVALUATION OF 148 COMPOUNDS AS AVIAN IMMOBILIZING AGENTS. *U.S. Fish Wildl. Serv. Spec. Sci. Rep. Wildl.* no. 150. ii + 30 p. Feb. 1972. For sale by Supt. Documents, GPO, Washington, D.C. at 35¢. *WR 147: 102*

Abstract: From 1961 to 1969, some 148 compounds were tested for immobilization of red-winged blackbirds *(Agelaius phoeniceus)* and starlings *(Sturnus vulgaris)*. Of these, 25 showed enough promise to warrant advanced testing on seven additional species of wild birds: the common grackle *(Quiscalus quiscula)*, common pigeon *(Columba livia)*, house finch *(Carpodius mexicanus)*, house sparrow *(Passer domesticus)*, mallard duck *(Anas platyrhynchos)*, ring-necked pheasant *(Phasianus colchicus)*, and yellow-headed blackbird *(Xanthocephalus xanthocephalus)*. Although no single compound was best suited for immobilizing all of the

nine species tested, Banol (6-chloro-3, 5-xylyl *N*-methyl carbamate) Dowco, 161 (O-ethyl-, O-2, 4-dichlorophenyl phosphoroamidate), metomidate [methyl ester of imidazole-5-carboxylic acid; 1-(α-methylbenzyl)], and metomidate HCl possessed exceptional activity on three or more of the species tested. Of the species tested, redwings and house finches were the most sensitive to immobilizing agents, and pheasants the least.

Stevenson, Robert Eugene. TEMPERATURE ACCLIMATIZATION IN THE BLACK-BILLED MAGPIE *(PICA PICA HUDSONIA*, SABINE). *Ph.D. thesis, Mont. State Univ.* 40 p. 1971. [From Diss. Abstr. Int. B Sci. Eng. 33(2), 1972.] *WR 147: 103*
It is proposed that black-billed magpies are limited in their eastward distribution in the mid-western United States by the lethal combination of high ambient temperatures and high relative humidities.--From abstr.

OTHER BIRDS

Andersson, J. Sune, and Stig A. L. Wester. BODY WEIGHT OF WINTERING DIPPERS *CINCLUS C. CINCLUS* (L.). *Ornis Scand.* 3(1): 39-43, 2 figs. 1972. *WR 147: 103*
[S:ta Gertruds väg 25, Västervik, Sweden.] Abstract: This study of the Dippers is based on body weights of 286 males and 369 females captured once or more times during the seven winter seasons 1964/65-70/71. Sex determination was based on wing length, which previously had proved to be a reliable method. The difference between the mean body weights of the sexes was 10.8 grams and highly significant. The seasonal and diurnal differences of the means of the sexes varied between 9.2-11.8 grams. Both the sexes reached their lowest mean weights immediately after arrival at the wintering area and their highest weights just before their departure to the breeding territory. The body weights of males and females increased on an average of 4.2 and 3.7 grams respectively from sunrise to sunset each daytime.

Balát, František. CLUTCH SIZE AND BREEDING SUCCESS OF THE TREE SPARROW, *PASSER MONTANUS* L., IN CENTRAL AND SOUTHERN MORAVIA. *Zool. Listy* 20(3): 265-280, illus. 1971. [From Biol. Abstr. 53(6), 1972.] *WR 147: 103*
[Czech. Acad. Sci., Brno, Czechoslovakia.] Data were obtained through checking nest-boxes placed in deciduous and pine woods. The average number of eggs in 325 complete clutches made 4.81 (maximum seven, minimum three) eggs. In the pine woods this number was significantly higher than in the deciduous ones. Almost one half of the pairs nested twice a year, while 15-25% three times a yr. The highest number of eggs was found in the second nesting, while the lowest number in the third nesting. The hatching success was 88.6%, the nestling survival being 63.8%. The breeding success was 56.5%. Losses were mostly due to the great spotted woodpecker *(Dendrocopos major)* and the marten *(Martes martes)*.

Bell, H. L. NOTES ON THE YELLOW-FACED MYNA. *Emu* 72(3): 110. July 1972. *WR 147: 103*
[21 Jagara Street, Aranda, A.C.T., Australia.] *"Mino dumonti."*

Berndt, R., and W. Winkel. ÜBER BEZIEHUNGEN ZWISCHEN GEBURTSDATUM UND FORTPFLANZUNGSZYKLUS BEI WEIBLICHEN TRAUERSCHNÄPPERN *(FICEDULA HYPOLEUCA)*. [ON THE RELATION BETWEEN DATE OF BIRTH AND REPRODUCTIVE CYCLE OF FEMALE PIED FLYCATCHERS *(FICEDULA HYPOLEUCA)*.] *Vogelwelt* 92: 53-58. 1971. [From Ibis 114(3), 1972. In German with English summ.] *WR 147: 103*
Female pied flycatchers born early in the season tend to breed early.

Bogorodskii, Y. V. [SOME FEEDING CHARACTERISTICS OF SMALL SPARROWS IN WINTER.] *Izv. Irkutsko-kh. Inst.* 26(3): 130-133. 1970. [From Biol. Abstr. 54(6), 1972, from Ref. Zh. Biol., 1971, no. 7I420. In Russian.] *WR 147: 103*
Of 118 spp. observed 46 were nesting species.

Catchpole, C. K. A COMPARATIVE STUDY OF TERRITORY IN THE REED WARBLER *(ACROCEPHALUS SCIRPACEUS)* AND SEDGE WARBLER *(A. SCHOENOBAENUS)*. *J. Zool.* (London) 166(2): 213-231, illus. 1972. [From Biol. Abstr. 54(6), 1972.] *WR 147: 104*
[Bedford Coll., Univ. London, London, England.]

Chin, Foo Juat, and Lord Medway. NEST RECORDS OF THE YELLOW-VENTED BULBUL AND THE MAGPIE ROBIN. *Malayan Nat. J.* 23: 145-148. 1970. [From Ibis 114(3), 1972.] *WR 147: 104*
"Pycnonotus goiavier and *Copsychus saularis."*

Curtis, H. S. THE ALBERT LYREBIRD IN DISPLAY. *Emu* 72(3): 81-84 + 2 pls. July 1972. *WR 147: 104*
[c/o Dep. For., 388-400 Ann St., Brisbane, Queensland, Australia.] Summary: The tail of the Albert Lyrebird *Menura alberti* is basically similar to that of the Superb *M. novaehollandiae* but is shorter and the outer rectrices are not ornamental. The curvature of the tail differs in the two species resulting in a difference in the appearance of the display. *M. alberti* does not build mounds but has recognizable though well-concealed display-platforms. Typically these include thin vines on which the bird stands. In full display he uses a particular high-stepping motion. The vines appear able to transmit movement to the surrounding vegetation causing foliage to shake sometimes as much as several metres away from the platform.

Davis, T. A. BAYA WEAVERBIRD NESTING ON HUMAN HABITATIONS. *J. Bombay Nat. Hist. Soc.* 68: 246-248. 1971. [From Ibis 114(3), 1972.] *WR 147: 104*

Dowsett, R. J. THE LESSER GREY SHRIKE *LANIUS MINOR* IN AFRICA. *Ostrich* 42 (4): 259-270, illus. 1971. [From Biol. Abstr. 54(2), 1972.] *WR 147: 104*
[Livingstone Mus., P.O. Box 498, Livingstone, Zambia.] *L. minor* performs a loop-migration within Africa, passing more to the east in spring, on northward passage, than in autumn. Within Europe it is known to migrate south-eastwards in autumn. The range occupied in the northern winter is shown to be confined to dry south-western Africa, mainly in South West Africa and Botswana.

Eriksson, K. ON THE OCCURRENCE OF THE GRASSHOPPER WARBLER *(LOCUSTELLA NAEVIA)* AND RIVER WARBLER *(L. FLUVIATILIS)* IN FINLAND RELATED TO THE BIRD WATCHING ACTIVITY. *Ornis Fenn.* 46: 113-125. 1969. [From Bird-Banding 42(4), 1971.] *WR 147: 104*

Eriksson, Kalervo. IRRUPTION AND WINTERING ECOLOGY OF THE GREAT SPOTTED WOODPECKER *DENDROCOPOS MAJOR*. *Ornis Fenn.* 48(2): 69-76, illus. 1971. [From Biol. Abstr. 54(6), 1972.] *WR 147: 104*
[State Alcohol Monop., Helsinki, Finland.]

Feduccia, Alan. THE DAILY CYCLE OF WINTERING SISSOR-TAILED FLYCATCHERS IN THE SAN JOSE AREA OF COSTA RICA. *Southwestern Nat.* 17(3): 296-297. 6 Oct. 1972. *WR 147: 104*
[Univ. N.C., Chapel Hill.] *"Muscivora forficata."*

Gavrilov, E. I., and A. F. Kovshar. BREEDING BIOLOGY OF THE HIMALAYAN RUBYTHROAT *ERITHACUS PECTORALIS* (GOULD) IN THE TIEN SHAN. *J. Bombay Nat. Hist. Soc.* 67: 14-25. 1970. [From Ibis 114(3), 1972.] *WR 147: 104*

Gordon, Margaret. REED BUNTINGS ON AN OXFORDSHIRE FARM. *Bird Study* 19(2): 81-90, 3 figs. + 1 pl. June 1972. *WR 147: 104*
[20 The Moors, Kidlington, Oxford, England.] *"Emberiza schoeniclus."*

Guinn, David Sloan. PSITTACIDAE—A MONOGRAPH OF THE PARROT FAMILY. *Ed.D. thesis, Ball State Univ.* 85 p. 1972. [From Diss. Abstr. Int. B Sci. Eng. 33 (2), 1972.] *WR 147: 104*

Haffer, Juergen. NACHTRAG ZUR VERBREITUNG VON *PIPRA FASCIICAUDA* UND *PIPRA IRIS* IN BRASILIEN. [SUPPLEMENT TO THE DISTRIBUTION OF *PIPRA FASCIICAUDA* AND *PIPRA IRIS* IN BRAZIL.] *J. Ornithol.* 112(4): 460-461. 1971. [From Biol. Abstr. 54(2), 1972. In German.] *WR 147: 105*
[P.O. Box 9000, Dallas, Tex.]

Hogstad, O. [NOTES ON THE WINTER FOOD OF THE GREAT SPOTTED WOODPECKER, *DENDROCOPOS MAJOR.*] *Sterna* (Stavanger) 10: 233-241. 1971. [From Ibis 114(3), 1972. In Norwegian with English summ.] *WR 147: 105*

Imboden, Christoph. DER BIOTOP DES KIEBITZ *VANELLUS VANELLUS* IN DER SCHWEIZ. [THE BIOTOPE OF THE LAPWING *VANELLUS VANELLUS* IN SWITZERLAND.] *Rev. Suisse Zool.* 78(3): 578-586. 1971. [From Biol. Abstr. 54(5), 1972. In German with English and French summ.] *WR 147: 105*
[Schweiz. Vogelwarte, Sempach, Switzerland.]

Keve, A., and A. Kovacs. NOTAS TAXONOMICAS SOBRE EL CHINGOLO *(ZONOTRICHIA CAPENSIS)* DEL SUD-OESTE ARGENTINO. [TAXONOMIC NOTES ON THE "CHINGOLO" *(ZONOTRICHIA CAPENSIS)* OF SOUTHEASTERN ARGENTINA.] *Hornero* 11(2): 85-92, illus. 1971. [From Biol. Abstr. 54(5), 1972. In Spanish with English summ.] *WR 147: 105*
[Asoc. Ornitol. Plata, Buenos Aires, Argentina.]

Moltoni, Edgardo. NOTIZIE RIGUARDANTI LA COMPARSA IN ITALIA DEL BECCOFRUSONE, *BOMBYCILLA G. GARRULUS* (L.), NEL 1970-1971. [THE APPEARANCE OF THE BOHEMIAN WAXWING *(BOMBYCILLA GARRULUS)* IN ITALY IN 1970-1971.] *Riv. Ital. Ornitol.* 41(3): 150-160. 1971. [From Biol. Abstr. 54(5), 1972. In Italian.] *WR 147: 105*
[Mus. Civ. Stor. Nat., Milan, Italy.]

Naroski, Samuel. PRESENCIA DE ASTHENES *PYRRHOLEUCA* EN UN BIOTOPO PALUSTRE. [THE PRESENCE OF ASTHENES *PYRRHOLEUCA* IN A MARSHY BIOTOPE.] *Hornero* 11(2): 93-97. 1971. [From Biol. Abstr. 54(3), 1972. In Spanish.] *WR 147: 105*
[Asoc. Ornitol. Plata, Buenos Aires, Argentina.] *A. pyrrholeuca flavogularis*, an Argentine bird hitherto considered characteristic of dry areas and thickets was identified on three different occasions in a marshy area surrounded by several rivers.—From abstr.

Reinsch, A., and K. Warncke. ZUR BRUTBIOLOGIE DES PIROLS *(ORIOLUS ORIOLUS).* [ON THE BREEDING BIOLOGY OF THE GOLDEN ORIOLE *(ORIOLUS ORIOLUS).*] *Vogelwelt* 92: 121-141. 1971. [From Ibis 114(3), 1972. In German with English summ.] *WR 147: 105*

Schmidt, Frank-Ulrich. ÜBERWINTERNDE BARTMEISEN *(PANURUS BIARMICUS)* IN SÜDNIEDERSACHSEN 1971/72. [OVER-WINTERING BEARDED TITMICE *(PANURUS BIARMICUS)* IN SOUTHERN LOWER SAXONY, 1971/1972.] *Ornithol. Mitt.* 24(5): 100-103, illus. May 1972. In German. *WR 147: 105*
[Wolfshof 8, Northeim, Germany.]

Schodde, R., and J. L. McKean. DISTRIBUTION AND TAXONOMIC STATUS OF *PARDTIA LAWESII HELENAE* DE VIS. *Emu* 72(3): 113-114. July 1972. *WR 147: 105*
[CSIRO, P.O. Box 84, Lyneham, A.C.T., Australia.]

Skøtt, Chr. MYRER SOM FODE FOR GRØNSPAETTE, *PICUS VIRIDIS.* [ANTS AS FEED TO GREEN WOODPECKER, *PICUS VIRIDIS.*] *Flora Fauna* 77(3): 60-64, illus. 1971. [From Biol. Abstr. 54(2), 1972. In Danish.] *WR 147: 105*
[Ll. Nygade 3, Horsens, Denmark.]

Storer, Robert W. THE BEHAVIOUR OF THE NEW ZEALAND DABCHICK. *Notornis* 18 (3): 175-186, 3 figs. Sept. 1971. *WR 147: 105*
Abstract: Observations and motion pictures were made on New Zealand Dabchicks in August and September 1969. Feeding, agonistic, courtship, and mating behaviour is described and compared with that of other grebes. The two principal

courtship ceremonies are the Patter Ceremony and the Diving Ceremony. The former was observed frequently and is common after territorial encounters. The latter may be the ceremony of pair formation and like the former may be important in strengthening the pair bond. These ceremonies differ considerably from those of other grebes studied, but presumably resemble those of the related Hoary-headed Grebe *Podiceps poliocephalus* of Australia.

Tarboton, W. R. BREEDING BIOLOGY OF THE CRIMSON-BREASTED SHRIKE AT OLIFANTSFONTEIN, TRANSVAAL. *Ostrich* 42(4): 271-290, illus. 1971. [From Biol. Abstr. 54(2), 1972.] *WR 147: 106*

[20 Hutcliffe Wood Road, Sheffield, Yorkshire, England.] A breeding study was made of *Laniarius atrococcineus* over a 3 mo. period at Olifantsfontein, Transvaal. Fourteen pairs of shrikes were occupying territories in an area of Acacia woodland, and details of territory and song are recorded. Details are given of consecutive clutches, nestling development and behavior and plumage development in the fledgling. Causes of the low breeding success are analyzed. Brief notes are given on the birds' aggressive behavior to other species. Feeding behavior is briefly described.

Vernon, C. J. NOTES ON THE BIOLOGY OF THE BLACK COUCAL. *Ostrich* 42(4): 242-258, illus. 1971. [From Biol. Abstr. 54(2), 1972.] *WR 147: 106*

[Private Bag 9087, Fort Victoria, Rhodesia.] *"Centropus grillii."*

Weise, H.-J., and A. Lüdtke. KISVOGELBEOBACHTUNGEN IN WESTBERLIN 1950-1969. [OBSERVATIONS OF KINGFISHER IN WEST BERLIN 1950-1969.] *Vogelwelt* 92: 104-112. 1971. [From Ibis 114(3), 1972.] *WR 147: 106*

"Alcedo atthis."

Willis, Edwin O. TAXONOMY, ECOLOGY, AND BEHAVIOR OF THE SOOTY ANT-TANAGER *(HABIA GUTTURALIS)* AND OTHER ANT-TANAGERS (AVES). *Am. Mus. Novit.* 2480. p. 1-36, illus. 1972. [From Biol. Abstr. 54(1), 1972.] *WR 147: 106*

[Oberlin Coll., Oberlin, Ohio.]

REPTILES & AMPHIBIANS

Alho, Cleber J. R. FREQUENCY OF INFESTATION BY *STRONGYLURIS FREITASI* ALHO 1969 IN *TROPIDURUS TORQUATUS* (WIED). *Rev. Brasil Biol.* 30(4): 539-542, illus. 1970. [From Biol. Abstr. 54(6), 1972. In English with Portuguese summ.] *WR 147: 106*

[Univ. Brasilia, Rio de Janeiro, Brazil.]

Alvarez del Toro, Miguel. THE WWF PROJECT ON CROCODILES IN CHIAPAS. *Trans. N. Am. Wildl. Nat. Resour. Conf.* 37: 81-86. 1972. *WR 147: 106*

[Inst. Hist. Nat., Tuxtla, Gutierrez, Chiapas, Mexico.] *"Crocodylus moreletti, Crocodylus acutus* and *Caiman sclerops chiapasius."*

Anderson, James D. PHOTOTACTIC BEHAVIOR OF LARVAE AND ADULTS OF TWO SUBSPECIES OF *AMBYSTOMA MACRODACTYLUM*. *Herpetologica* 28(3): 222-226. Sept. 1972. *WR 147: 106*

[Rutgers Univ., Newark, N.J.] Abstract: Adults and larvae of *Ambystoma macrodactylum croceum* and *A. m. sigillatum* were tested for responses to light. Adults of both subspecies were photonegative, *croceum* strongly, *sigillatum* weakly. Larvae of *croceum* were negatively phototactic, but large larvae of *sigillatum* showed a positive phototaxis. The negative phototaxis of *croceum* is attributed to its arid habitat; the more positive reactions of *sigillatum* are correlated with its cool, montane habitat.

Awbrey, Frank T. "MATING CALL" OF A *BUFO BOREAS* MALE. *Copeia* 1972(3): 579-581, 5 figs. 8 Sept. 1972. *WR 147: 106*

[San Diego State Coll., San Diego, Calif.]

Ballinger, Royce E., and Gordon D. Schrank. REPRODUCTIVE POTENTIAL OF FEMALE WHIPTAIL LIZARDS, *CNEMIDOPHORUS GULARIS GULARIS*. *Herpetologica* 28(3): 217-222, 3 figs. Sept. 1972. *WR 147: 107*

[Angelo State Univ., San Angelo, Tex.] Abstract: The reproductive cycle of *Cnemidophorus gularis gularis* was studied by dissecting 173 females. Reproduction begins in late April and ceases by late July. Females may first reproduce at a size of about 65 mm snout vent length or at 10-12 months of age. As many as half of the females do not mature until their second reproductive season at an age of 20-22 months. Females which mature as yearlings do so only late in the reproductive season (June) and produce a single and typically smaller clutch of 3-4 eggs. Older females normally produce two clutches per year with an average of five eggs each.

Bauerle, Bruce Allen. BIOLOGICAL PRODUCTIVITY OF SNAKES OF THE PAWNEE SITE. *D.A. thesis, Univ. N. Colo.* 86 p. 1972. [From Diss. Abstr. Int. B Sci. Eng. 33(3), 1972.] *WR 147: 107*

During 1970-1971, 228 prairie garter snakes *(Thamnophis radix)*, 33 prairie rattlesnakes *(Crotalus viridis)*, 31 gopher snakes *(Pituophis catenifer)*, and 17 western hognosed snakes *(Heterodon nasicus)* were collected, marked, weighed, measured, and released on the Pawnee Site of the International Biological Program.--From abstr.

Belova, E. M. [SUSCEPTIBILITY OF REPTILES TO INFECTION WITH LEISHMANIAE AND NON-IDENTIFIED CULTURES OF LEPTOMONADS.] *Parazitologiya* 5(5): 466-469. 1971. [From Biol. Abstr. 54(1), 1972. In Russian with English summ.] *WR 147: 107*

[Ashkhabad Inst. Epidemiol. Hyg., Ashkhabad, USSR.]

Bennett, David H. NOTES ON THE TERRESTRIAL WINTERING OF MUD TURTLES *(KINOSTERNON SUBRUBRUM)*. *Herpetologica* 28(3): 245-247. Sept. 1972. *WR 147: 107*

[Va. Polytechnic Inst., Blacksburg.] Abstract: Two mud turtles *(Kinosternon subrubrum)* that moved away from a Carolina bay in South Carolina were located and found to spend the winter on land burrowed 2-11 cm below the surface. Overland movement ceased in November although vertical movement in the burrow continued through December. Turtles commenced moving in early March when temperatures exceeded 21 C.

Bentley, P. J., and K. Schmidt-Nielsen. ACUTE EFFECTS OF SEA WATER ON FROGS *(RANA PIPIENS)* [ECOLOGICAL IMPLICATIONS]. *Comp. Biochem. Physiol. A Comp. Physiol.* 40(2A): 547-548. 1971. [From Biol. Abstr. 54(2), 1972.] *WR 147: 107*

[Mt. Sinai Sch. Med., New York, N.Y.]

Bickham, John W., and James A. MacMahon. FEEDING HABITS OF THE WESTERN WHIPTAIL LIZARD, *CNEMIDOPHORUS TIGRIS*. *Southwest. Nat.* 17(2): 207-208. 15 Sept. 1972. *WR 147: 107*

[Utah State Univ., Logan.]

Brame, Arden H., Jr., and David B. Wake. NEW SPECIES OF SALAMANDERS (GENUS *BOLITOGLOSSA*) FROM COLOMBIA, ECUADOR AND PANAMA. *Los Angeles County Mus. Contrib. Sci.* 219. p. 1-34, illus. 1972. [From Biol. Abstr. 54(4), 1972. In English with Spanish summ.] *WR 147: 107*

[Nat. Hist. Mus. Los Angeles County, Los Angeles, Calif.]

Brandon, Ronald A. HYBRIDIZATION BETWEEN THE MEXICAN SALAMANDERS *AMBYSTOMA DUMERILII* AND *AMBYSTOMA MEXICANUM* UNDER LABORATORY CONDITIONS. *Herpetologica* 28 (3): 199-207, 5 figs. Sept. 1972. *WR 147: 107*

[Southern Ill. Univ., Carbondale.]

Bruce, Richard C. VARIATION IN THE LIFE CYCLE OF THE SALAMANDER *GYRINOPHILUS PORPHYRITICUS*. *Herpetologica* 28(3): 230-245, 4 figs. Sept. 1972. *WR 147: 107*

[Western Carolina Univ., Cullowhee, N.C.] The ecology and life cycle of *Gyrinophilus porphyriticus* were studied at four localities in the southern Blue Ridge and Piedmont of North and South Carolina.--From summ.

Brushko, Z. K. [SEASONAL CHANGES OF MORPHO-PHYSIOLOGICAL INDICES OF VENOMOUS SNAKES.] *Ekologiya* 1(4): 101-103. 1970. [From Biol. Abstr. 54(5), 1972. In Russian.] *WR 147: 108*

[Inst. Zool. Parasitol., Acad. Sci. Uzb. SSR, Tashkent, USSR.] Abstract: The seasonal change of the body weight of venomous snakes is due not only to fluctuations of fat stores but also to a change of weight of the internal organs. The principal role in the change of body weight is apparently played by the musculature, which in the saw-scaled viper *(Echis carinata)*, for example, amounts to 70-80% of total weight. The increase of body weight of the snakes during the summer and fall is an adaptation to hibernation which lasts 3-4 mo.

Campbell, Howard W., and William E. Evans. OBSERVATIONS ON THE VOCAL BEHAVIOR OF CHELONIANS. *Herpetologica* 28(3): 277-280, 2 figs. Sept. 1972. *WR 147: 108*

[Univ. Fla., Gainesville.] Abstract: *Geochelone carbonaria* utters a "chirp" or "cluck" similar to the contact call of many other species of animals, *Geochelone travancorica* calls in "chorus" at night for unknown purposes, and young, brightly-marked *Platysternon megacephalum* utter a "squeal" when disturbed. This behavior is lost with maturity when the bright colors are lost. The acoustic behavior of Chelonians has received little attention in the past. The widespread occurrence of this behavior in this group and its similarity to the vocal behavior of other groups suggest that it deserves more attention by students of reptiles and of behavior.

Carl, G. Clifford. RECORD OF THE SHARP-TAILED SNAKE FROM SOUTH PENDER ISLAND, BRITISH COLUMBIA. *Syesis* 4(1/2): 267. 1971. [From Biol. Abstr. 54(4), 1972.] *WR 147: 108*

[British Columbia Prov. Mus., Victoria, British Columbia, Canada.] Habitat and description of the sharp-tailed snake, *Contia tenuis*, is given.

Carr, Archie, and Marjorie H. Carr. SITE FIXITY IN THE CARIBBEAN GREEN TURTLE. *Ecology* 53(3): 425-429, 2 figs. late Spring 1972. *WR 147: 108*

[Univ. Fla., Gainesville.] Green turtles *(Chelonia mydas)* return to within an average of 1.2 km of earlier nesting sites, rather than to exact sites.--Courtesy/ Paul A. Stewart.

Castroviejo, Javier, Santiago Castroviejo, and Alfredo Salvador. ALGUNOS DATOS SOBRE LA DISTRIBUCION DE LA LAGARTIJA DE TURBERA, *LACERTA VIVIPARA*, EN ESPANA. [NEW DATA ON THE DISTRIBUTION OF *LACERTA VIVIPARA* IN SPAIN.] *Bol. Roy. Soc. Esp. Hist. Nat. Secc. Biol.* 68(3/4): 135-145, illus. 1970. [From Biol. Abstr. 54(4), 1972. In Spanish with English summ.] *WR 147: 108*

[Esc. Tec. Super. Ing. Montes, Madrid, Spain.]

Castroviejo, Javier, and Alfredo Salvador. NOTA SOBRE HERPETOLOGIA DEL NOROESTE DE ESPANA. [A NOTE ON THE HERPETOLOGY OF NORTHWEST SPAIN.] *Bol. Roy. Soc. Esp. Hist. Nat. Secc. Biol.* 69(3/4): 119-122. 1970. [From Biol. Abstr. 54(4), 1972. Ir Spanish with English summ.] *WR 147: 108*

[Esc. Tec. Super. Ing. Montes, Madrid, Spain.]

Cedrini, Luigi, and Aldo Fasolo. OLFACTORY ATTRACTANTS IN SEX RECOGNITION OF THE CRESTED NEWT: AN ELECTROPHYSIOLOGICAL RESEARCH. *Monit. Zool. Ital.* 5 (4): 223-229. 1971. [From Biol. Abstr. 54(5), 1972. In English with Italian summ.] *WR 147: 108*

[Ist. Fisiol. Gen., Univ., Corso Raffaello, 30, Torino, Italy.]

Cendrero, Orestes, and Benito Madariaga. NOTA ACERCA DE LAS TORTUGAS LAUD, *DERMOCHELYS CORIACEA*, CAPTURADAS EN LAS COSTAS DE ASTURIAS Y SANTANDER. [NOTE ON LEATHERY TURTLES, *DERMOCHELYS CORIACEA* (L.), FOUND IN NORTHERN SPAIN.] *Bol. Roy. Soc. Esp. Hist. Nat. Secc. Biol.* 68(3/4): 115-117, illus. 1970. [From Biol. Abstr. 54(4), 1972. In Spanish with English summ.] *WR 147: 108*

[Lab. Oceanogr., Santander, Spain.]

Cooney, Joseph C., and Kirby L. Hays. BIONOMICS OF THE GOPHER TORTOISE TICK, *AMBLYOMMA TUBERCULATUM* MARX. *J. Med. Entomol.* 9(3): 239-245, 4 figs. 29 June 1972. *WR 147: 109*
[Auburn Univ., Auburn, Ala.]

Covacevich, Jeanette, and Colin Limpus. OBSERVATIONS ON COMMUNITY EGG-LAYING BY THE YELLOW-FACED WHIP SNAKE, *DEMANSIA PSAMMOPHIS* (SCHLEGEL) 1837 (SQUAMATA: ELAPIDAE). *Herpetologica* 28(3): 208-210, 1 fig. Sept. 1972. *WR 147: 109*
[Queensland Mus., Gregory Terrace, Brisbane, Australia.] Abstract: A community nest containing numerous clutches of *Demansia psammophis* eggs is described. The nest site had been used for successive seasons and was apparently chosen as an ideal site among less suitable areas.

Crook, Ian G., I. A. E. Atkinson, and B. D. Bell. HABITATS OF THE FROG *LEIOPELMA HAMILTONI* McCULLOCH ON STEPHENS AND MAUD ISLANDS, COOK STRAIT. *New Zealand Dep. Internal Affairs Wildl. Publ.* no. 139. 12 p., 9 figs. 1971. [Reprinted from New Zealand J. Sci. 14(4): 1082-1093. Dec. 1971.] *WR 147: 109*
[Wildl. Serv., Dep. Internal Affairs, Wellington, New Zealand.] Summary: The two known habitats of the frog *Leiopelma hamiltoni*, on Stephens and Maud Islands, are described briefly and compared. Measures are needed to ensure the future survival of this rare species and these are considered together with factors that may have influenced its numbers in the past.

Crump, Martha L. TERRITORIALITY AND MATING BEHAVIOR IN *DENDROBATES GRANULIFERUS* (ANURA: DENDROBATIDAE). *Herpetologica* 28(3): 195-198. Sept. 1972. *WR 147: 109*
[Univ. Kans., Lawrence.] Abstract: In Costa Rica *Dendrobates granuliferus* has definitive territorial behavior involving vocalization, posture, and combat. Only males defend territories. Males scout ahead for oviposition sites and lead females to these sites. Females have a uniform courtship behavior consisting of rubbing the head and chin of the male with her head. Oviposition and fertilization take place terrestrially while the frogs are in a vent to vent position, facing away from each other; there is no amplexus. Each female apparently lays several small clutches per breeding season.

Degenhardt, William G., and Kirkland L. Jones. A NEW SAGEBRUSH LIZARD, *SCELOPORUS GRACIOSUS*, FROM NEW MEXICO AND TEXAS. *Herpetologica* 28(3): 212-217, 2 figs. Sept. 1972. *WR 147: 109*
[Univ. N. Mex., Albuquerque.] Abstract: A new subspecies of *Sceloporus graciosus* that differs from other races of the same species in color, pattern, scalation, and habitat preference is described from sand dune areas of southeastern New Mexico and adjacent Texas. Several aspects of the lizard's natural history are considered.

Dill, Clifford D. REPTILIAN CORE TEMPERATURES: VARIATION WITHIN INDIVIDUALS. *Copeia* 1972(3): 577-579, 2 figs. 8 Sept. 1972. *WR 147: 109*
[Univ. Minn., Minneapolis.] *"Pituophis melanoleucus, Elaphe vulpina,* and *Thamnophis radix."*

Dixon, James R., and Carl S. Lieb. A NEW NIGHT SNAKE FROM MEXICO (SERPENTES: COLUBRIDAE). *Los Angeles County Mus. Contrib. Sci.* 222. p. 1-7, illus. 1972. [From Biol. Abstr. 54(4), 1972.] *WR 147: 109*
[Tex. A&M Univ., College Station.] *"Hypsiglena torquata jani."*

Dole, Jim W. THE ROLE OF OLFACTION AND AUDITION IN THE ORIENTATION OF LEOPARD FROGS, *RANA PIPIENS*. *Herpetologica* 28(3): 258-260, 1 fig. Sept. 1972. *WR 147: 109*
[Calif. State Univ., Northridge.] Abstract: Movements of displaced leopard frogs deprived of either the sense of smell or hearing were monitored using a trailing device. Anosmic animals were able to orient and home even on nights with heavy fog and reduced visibility. Deaf animals also oriented homeward.

Dole, Jim W. EVIDENCE OF CELESTIAL ORIENTATION IN NEWLY-METAMORPHOSED *RANA PIPIENS*. *Herpetologica* 28(3): 273-276, 1 fig. Sept. 1972. *WR 147: 110*
[Calif. State Univ., Northridge.] Abstract: Recently-metamorphosed leopard frogs *(Rana pipiens)* showed an ability to orient along their Y-axis when able to view the sun, but appeared to move randomly under nocturnal skies. Froglets trapped moving away from their natal pond in the season's first dispersal wave oriented in the direction of their movement when tested immediately after capture with the sun visible; the directional choice gradually reversed over a period of five days. In later dispersal waves froglets preferred the homeward direction.

Eiselt, Josef, and Hans M. Steiner. ERSTFUND EINES HYNOBIIDEN MOLCHES IN IRAN. [FIRST DISCOVERY OF A HYNOBIID SALAMANDER IN IRAN.] *Ann. Naturhist. Mus. Wien* 74. p. 77-90, illus. 1970. [From Biol. Abstr. 54(4), 1972. In German.] *WR 147: 110*
[Naturhist. Mus. Wien, Vienna, Austria.] *"Batrachuperus persicus."*

Folkerts, George W. NOTES ON SOUTH CAROLINA SALAMANDERS. *J. Elisha Mitchell Sci. Soc.* 87(4): 206-208. 1971. [From Biol. Abstr. 54(6), 1972.] *WR 147: 110*
[Auburn Univ., Auburn, Ala.]

Franz, Richard. DUSKY SALAMANDERS AND THE ALLEGHANY FRONT OF MARYLAND. *Bull. Md. Herpetol. Soc.* 8(3): 61-64. Sept. 1972. *WR 147: 110*
[Fla. State Mus., Gainesville.] *"Desmognathus fuscus, D. monticola* and *D. ochraphaeus."*

Freytag, Guenther E. WASSERMOLCHE MIT UNGEWOEHNLICHER HAUTBESCHAFFENHEIT. [SALAMANDERS WITH UNUSUAL SKIN QUALITIES.] *Salamandra* 7(2): 65-70, illus. 1971. [From Biol. Abstr. 54(1), 1972. In German with English summ.] *WR 147: 110*
[Invalidenst. 101, Berlin, Germany.] *"Triturus helveticus helveticus, Turiciha torosa* and *Pachytriton brevipes."*

Gailiauskienė, J., and S. Gecevičiūtė. [DATA ON SOME PARASITICAL INVESTIGATIONS OF THE FROG *(RANA TEMPORARIA* L.*)* IN THE SURROUNDINGS OF KAUNAS.] *Acta Parasitol. Lituanica* 10: 103-108. 1970. In Russian with Lithuanian and English summ. *WR 147: 110*

Geisselmann, B., R. Flindt, and H. Hemmer. STUDIEN ZUR BIOLOGIE, OEKOLOGIE UND MERKMALSVARIABILITAET DER BEIDEN BRAUNFROSCHARTEN *RANA TEMPORARIA* L. UND *RANA DALMATINA* BONAPARTE. [STUDIES ON THE BIOLOGY, ECOLOGY AND VARIABILITY OF CHARACTERISTICS OF BOTH SPECIES OF BROWN FROG *RANA TEMPORARIA* L. AND *RANA DALMATINA* BONAPARTE.] *Zool. Jahrb. Abt. Syst. Oekol. Geogr. Tiere* 98(4): 521-568, illus. 1971. [From Biol. Abstr. 54(2), 1972. In German with English summ.] *WR 147: 110*
[Inst. Physiol. Zool. Univ., Mainz, Germany.] Experiments suggest the impossibility of natural hybridization between these two spp. of brown frogs.

Goldberg, Stephen R. REPRODUCTION IN THE SOUTHERN ALLIGATOR LIZARD *GERRHONOTUS MULTICARINATUS*. *Herpetologica* 28(3): 267-273, 4 figs. Sept. 1972. *WR 147: 110*
[Whittier Coll., Whittier, Calif.] Abstract: A *Gerrhonotus multicarinatus webbi* population was studied in the Puente Hills, north of Whittier, Los Angeles Co., California. Histological examinations revealed that testes contained sperm from late February through late May. Spermiogenesis ceases by early June at which time the germinal epithelium consists of spermatogonia and Sertoli cells. A spermatogonial proliferation initiates the new testicular cycle in August. Recrudescence takes place during late September-October when testicular sizes increase and primary spermatocytes become abundant. Yolk deposition commences in late March and may be completed by mid-May. The egg-laying period encompasses June and the first half of July.

Goris, Richard C. SUCCESSFUL MAINTENANCE OF A SNAKE COLLECTION ENTIRELY ON FROZEN FOOD. *Snake* 2(2): 126-130, illus. 1970. [From Biol. Abstr. 54(5), 1972.] *WR 147: 111*

[Japanese Snake Inst., Yabuzuka, Gunma, Japan.] Abstract: The food items used, the methods of freezing and feeding, and the results obtained in a private collection are described. The following items were packaged and frozen in large quantities: loaches, carp and related fishes, whale meat, newly hatched chicks (mostly white leghorn), newly hatched quail, white mice (both adults and hairless sucklings) and white rats (both adults and hairless sucklings).

Goris, Richard C. EXTRAORDINARY FEEDING BEHAVIOR OF *RHABDOPHIS TIGRINUS* (BOIE) UNDER SEMI-CAPTIVE CONDITIONS. *Snake* 2(2): 133-134, illus. 1970. [From Biol. Abstr. 54(5), 1972.] *WR 147: 111*

[Japanese Snake Inst., Yabuzuka, Gunma, Japan.] Large numbers of *Elaphe quadrivirgata* are kept together with a few *R. tigrinus*. Every 7-10 days several hundred white leghorn chicks are introduced into the enclosures, where they are eaten by the larger specimens of *Elaphe*. In addition, every week 10-15 kg of live loaches are consumed avidly by both *Elaphe* and *Rhabdophis*. On 3 specific occasions large (80-100 cm) *R. tigrinus* was observed eating chicks. Other unsuccessful attempts by smaller specimens were also observed.

Hahn, Donald E., Theron E. Magers, and John W. Goertz. THE STATUS OF *ELAPHE GUTTATA* (SERPENTES: COLUBRIDAE), IN CENTRAL AND NORTHWESTERN LOUISIANA. *Southwest. Nat.* 17(2): 208-209. 15 Sept. 1972. *WR 147: 111*

[Marcus J. Lawrence Mem. Hosp., Cottonwood, Ariz.]

Haukioja, Erkki. SHORT-DISTANCE DISPERSAL IN THE REED BUNTING *EMBERIZA SCHOENICLUS*. *Ornis Fenn.* 48(2): 45-67, illus. 1971. [From Biol. Abstr. 54 (6), 1972.] *WR 147: 111*

[Univ. Turku, Turku, Finland.] A computer method is described which, using observed movements, corrects bias caused by heterogeneity of terrain, and patchy distribution of marking and recapturing.

Hedeen, Stanley E. ESCAPE BEHAVIOR AND CAUSES OF DEATH OF THE MINK FROG, *RANA SEPTENTRIONALIS*. *Herpetologica* 28(3): 261-262. Sept. 1972. *WR 147: 111*

[Xavier Univ., Cincinnati, Ohio.] Abstract: Mink frogs in the vicinity of Lake Itasca, Clearwater County, Minnesota, escaped into submerged vegetation or bottom mud 86.5% of the times confronted. Associated ranids escaped into water less frequently. Both vertebrates and invertebrates preyed on *Rana septentrionalis*. Death also appeared to be caused by red leg.

Heyer, W. Ronald. MATING CALLS OF SOME FROGS FROM THAILAND. *Fieldiana Zool.* 58(6): 61-82, illus. 1971. [From Biol. Abstr. 54(6), 1972.] *WR 147: 111*

The vocal activity of 22 spp. (11 genera and 4 families) of frogs was recorded and analyzed by means of sonagraphic techniques.

Himstedt, W. DIE TAGESPERIODIK VON SALAMANDRIDEN. [DIURNAL RHYTHM IN SALAMANDERS.] *Oecologia* (Berlin) 8(2): 194-208, illus. 1971. [From Biol. Abstr. 54(1), 1972. In German with English summ.] *WR 147: 111*

[Univ. Vienna, Vienna, Austria.]

Hollis, Patrick D. A SURVEY OF PARASITES OF THE BULLFROG, *RANA CATESBEIANA* SHAW, IN CENTRAL EAST TEXAS. *Southwest. Nat.* 17(2): 198-200. 15 Sept. 1972. *WR 147: 111*

[Univ. Okla., Norman.] Identified in this study were four species of nematodes representing three families, six species of trematodes from three families, one species of cestode, and one species of acanthocephala.

Hughes, George R. THE OLIVE RIDLEY SEA-TURTLE *(LEPIDOCHELYS OLIVACEA)* IN SOUTH-EAST AFRICA. *Biol. Conserv.* 4(2): 128-134, illus. 1972. [From Biol. Abstr. 54(5), 1972.] *WR 147: 112*

[Oceanogr. Res. Inst., Durban, South Africa.] Recent discoveries of *L. olivacea* in south-east Africa confirm some dubious old records and indicate that there are substantial populations of these sea-turtles off a limited portion of the east African coast and in the coastal waters of Madagascar.

Jackson, Crawford G., Jr., Macdonald Fulton, and Marguerite M. Jackson. CRANIAL ASYMMETRY WITH MASSIVE INFECTION IN A BOX TURTLE. *J. Wildl. Dis.* 8(3): 275-277, 1 fig. July 1972. *WR 147: 112*

[Miss. State Coll. Women, Columbus.]

Jaeger, Robert G. FOOD AS A LIMITED RESOURCE IN COMPETITION BETWEEN TWO SPECIES OF TERRESTRIAL SALAMANDERS. *Ecology* 53(3): 535-546, 9 figs. Late Spring 1972. *WR 147: 112*

[Univ. Wis., Madison.] Contiguous allopatry between *Plethodon richmondi* and *P. cinereus* seems to result from an interaction of competitive exclusion and differential tolerance to dryness. *P. cinereus* is presumably a superior competitor for food in the soil and excludes *P. richmondi* to areas of talus too dry for *cinereus*.—Courtesy/ Paul A. Stewart.

Jaeschke, Julius. ZUR EINBUERGERUNG DER AESKULAPNATTER IN OBERHESSEN. [ON THE NATURALIZATION OF *ELAPHE LONGISSIMA* IN UPPER HESSEN (GERMANY).] *Salamandra* 7(2): 85. 1971. [From Biol. Abstr. 54(2), 1972. In German with English summ.] *WR 147: 112*

[Tritz-Tarnow-St. 7, Frankfurt/Main, Germany.] Forty specimens of *E. longissima* from Schlangenbad were introduced in 1853/54 to Schlitz, Oberhessen, Western Germany, by Graf Von Goertz. This population still exists in 1971. It is endangered only by automobile traffic as snakes lying on the road are often killed by cars.

Koba, Kazuo, Kenichi Tanaka, Kiyoshi Yoshizaki, and Eiichi Nakamoto. [EGGS AND HATCHING OF THE HIME-HABU, *TRIMERESURUS OKINAVENSIS* BOULENGER.] *Snake* 2(2): 111-121, illus. 1970. [From Biol. Abstr. 54(1), 1972. In Japanese with English summ.] *WR 147: 112*

[Japanese Snake Inst., Yabuzuka, Gunma, Japan.] Data on condition of the eggs in the oviducts, oviposition, egg measurements, hatching and description of the juveniles of *T. okinawensis* are given.

Kohler, Anthony J. THE COMMON BOOKS ON REPTILE CARE: A COMPARATIVE OVERVIEW—PART III. CHAPTER 4—SNAKES. *Bull. Md. Herpetol. Soc.* 8(3): 66-79. Sept. 1972. *WR 147: 112*

[1300-30th St., B-1, No. 18, Boulder, Colo.]

Kosh, Richard J., and Victor H. Hutchison. THERMAL TOLERANCES OF PARIETALECTOMIZED *ANOLIS CAROLINENSIS* ACCLIMATIZED AT DIFFERENT TEMPERATURES AND PHOTOPERIODS. *Herpetologica* 28(3): 183-191, 5 figs. Sept. 1972. *WR 147: 112*

[Curry Coll., Milton, Mass.]

Kushniruk, V. A. [BIOLOGY OF THE SPOTTED SALAMANDER.] *Biol. Nauki* 14(7): 34-36. 1971. [From Biol. Abstr. 54(2), 1972. In Russian.] *WR 147: 112*

"Salamandra salamandra salamandra."

Loop, Michael S., and Sheila A. Scoville. RESPONSE OF NEWBORN *SUMECOS INEXPECTATUS* TO PREY-OBJECT EXTRACTS. *Herpetologica* 28(3): 254-256. Sept. 1972. *WR 147: 112*

[Fla. State Univ., Tallahassee.] Abstract: Newborn *Sumecos inexpectatus* were presented body surface extracts from two insects and one mammal. During 60 sec presentations of each stimulus, the number of tongue flicks and the duration of orientation toward the extracts were recorded. The mean duration of orientation

to the stimuli were different (.05 <p <.10) with the Elateridae larvae and laboratory mouse receiving the highest scores. The mean orientation time to the juvenile Reduviidae was lower than the mean orientation time to the Elateridae larvae extract (p = .10). These differences in orientation times suggest (1) an innate chemical discrimination of potential prey animals, and (2) a possible disinterest in the extract from a distasteful insect.

Lukina, G. P. [BIOLOGY OF THE REPRODUCTION OF THE POND TORTOISE IN THE EASTERN REGION OF THE AZOVO SEA.] *Ekologiya* 2(3): 99-100. 1971. [From Biol. Abstr. 54(6), 1972. In Russian.] *WR 147: 113*
[Rostov State Univ., Rostov-on-Don, USSR.] *"Emys orbicularis."*

Markov, G. S., M. I. Fomina, and V. G. Vakker. [NEW DATA ON PROTISTA FAUNA OF LIZARDS AND SNAKES IN KAZAKHSTAN.] *Izv. Akad. Nauk Kaz. SSR Ser. Biol.* 4. p. 56-61, illus. 1971. [From Biol. Abstr. 54(2), 1972. In Russian.] *WR 147: 113*
[Inst. Zool. Acad. Sci. Kaz. SSR, Alma-Ata, USSR.]

Martin, James H., and Roland M. Bagby. TEMPERATURE-FREQUENCY RELATIONSHIP OF THE RATTLESNAKE RATTLE. *Copeia* 1972(3): 482-485, 1 fig. 8 Sept. 1972. *WR 147: 113*
[Univ. Tenn., Knoxville.] Abstract: The rattling frequency of the rattlesnake, *Crotalus atrox*, does not appear to be linear throughout a body temperature range of 3-40° C, although it does appear to be linear between 16 and 32 C. At the higher temperature (above 34 C) rattling becomes spasmodic because the antagonistic muscles on either side of the tail are contracting at the same time.

Means, D. Bruce. COMMENTS ON UNDIVIDED TEETH IN URODELES. *Copeia* 1972(3): 586-588, 2 figs. 8 Sept. 1972. *WR 147: 113*
[Tall Timbers Res. Sta., Route 1, Box 160, Tallahassee, Fla.]

Mertens, Robert. DIE AMPHIBIEN UND REPTILIEN WEST-PAKISTANS. [THE AMPHIBIA AND REPTILES FROM WEST PAKISTAN.] *Senckenb. Biol.* 52(1/2): 7-15, illus. 1971. [From Biol. Abstr. 54(5), 1972. In German.] *WR 147: 113*
[Nat.-Mus. and Forsch. Inst. Senckenberg, Frankfurt/Main, Germany.] At present the number of species and subspecies of the herpetofauna in West Pakistan is 81.

Mertens, Robert. DIE STACHELSCHILDKROETE *(HEROSEMYS SPINOSA)* UND IHRE VERWANDTEN. [THE SPINY TURTLE *(HEROSEMYS SPINOSA)* AND ITS RELATIVES.] *Salamandra* 7(2): 49-54, illus. 1971. [From Biol. Abstr. 54(1), 1972. In German with English summ.] *WR 147: 113*
[Nat.-Mus. and Forsch. Inst. Senckenberg, Frankfurt/Main, Germany.]

Mertens, Robert. BEMERKUNGEN UEBER DIE HAEUTUNG DER BRUECKENECHSE *(SPHENODON PUNCTATUS)* IN GEFANGENSCHAFT. [REMARKS ON THE MOLTING OF THE RHYNCOCEPHALIA *(SPENODON PUNCTATUS)* IN CAPTIVITY.] *Salamandra* 7(2): 81-82. 1971. [From Biol. Abstr. 54(3), 1972. In German with English summ.] *WR 147: 113*
[Nat.-Mus. and Forsch. Inst. Senckenberg, Frankfurt/Main, Germany.]

Mertens, Robert. ZUR KENNTNIS VON *BUFO LURISTANICUS* (SALIENTIA, BUFONIDAE). [ON THE KNOWLEDGE OF *BUFO LURISTANICUS* (SALIENTIA, BUFONIDAE).] *Salamandra* 7 (2): 83-84, illus. 1971. [From Biol. Abstr. 54(1), 1972. In German with English summ.] *WR 147: 113*
[Nat.-Mus. and Forsch. Inst. Senckenberg, Frankfurt/Main, Germany.]

Meyer, John R., and Larry David Wilson. A DISTRIBUTIONAL CHECKLIST OF THE AMPHIBIANS OF HONDURAS. *Los Angeles County Mus. Contrib. Sci.* 218. p. 1-47, illus. 1971. [From Biol. Abstr. 54(5), 1972.] *WR 147: 113*
[Res. Ranch, Elgin, Aris.] The amphibian fauna of the Republic of Honduras is listed. For each of the 52 spp. present, brief synonymies, a statement of the

entire range, a list of Honduran locality records, and a statement of the ecological distribution in Honduras are given. Keys for identification are provided. A list of species of questionable occurrence and a gazetteer of herpetological localities in Honduras are included.

Michael, Edwin D. GROWTH RATES IN *ANOLIS CAROLINENSIS*. *Copeia* 1972(3): 575-577, 2 figs. 8 Sept. 1972. *WR 147: 114*
[W. Va. Univ., Morgantown.]

Mount, Robert H. DISTRIBUTION OF THE WORM SNAKE *CARPHOPHIS AMOENUS* (SAY) IN ALABAMA. *Herpetologica* 28(3): 263-266, 2 figs. Sept. 1972. *WR 147: 114*
[Auburn Univ., Auburn, Ala.]

Mrosovsky, N. SPECTROGRAPHS OF THE SOUNDS OF LEATHERBACK TURTLES. *Herpetologica* 28(3): 256-258, 1 fig. Sept. 1972. *WR 147: 114*
[Univ. Toronto, Toronto, Ontario, Canada.] Abstract: Spectrographs were made of the sounds emitted by female leatherback turtles, *Dermochelys coriacea*, when nesting. The sounds were relatively intense in the 300-500 Hz range. The possible importance of audition in sea turtles is discussed.

Mueller, Paul. UEBER DIE RELATIVE SCHWANZLAENGE ELBANISCHER SMARAGDEIDECHSEN *(LACERTA VIRIDIS FEJERVARYI* VASVARI*)*. [ON THE RELATIVE TAIL LENGTH OF THE LIZARD *(LACERTA VIRIDIS FEJERVARYI* VASVARI*)* FROM ELBA ISLAND.] *Salamandra* 7(2): 61-64, illus. 1971. [From Biol. Abstr. 54(1), 1972. In German with English summ.] *WR 147: 114*
[Univ. Saarlandes, Saarbruecken, Germany.] Measurements of 131 specimens of *L. viridis fejervaryi* from Elba island were taken. There was no proof that relative tail length will decline in populations of higher altitudes (more than 600 m) or will change from east to west.

Munsey, Larry D. SALINITY TOLERANCE OF THE AFRICAN PIPID FROG, *XENOPUS LAEVIS*. *Copeia* 1972(3): 584-586, 1 fig. 8 Sept. 1972. *WR 147: 114*
[Calif. State Coll., Fullerton.]

Nelson, David H., and J. Whitfield Gibbons. ECOLOGY, ABUNDANCE, AND SEASONAL ACTIVITY OF THE SCARLET SNAKE, *CEMOPHORA COCCINEA*. *Copeia* 1972(3): 582-584, 1 fig. 8 Sept. 1972. *WR 147: 114*
[Savannah River Ecol. Lab., Drawer E, Aiken, S.C.]

Parker, William S. ASPECTS OF THE ECOLOGY OF A SONORAN DESERT POPULATION OF THE WESTERN BANDED GECKO, *COLEONYX VARIEGATUS* (SAURIA, EUBLEPHARINAE). *Am. Midl. Nat.* 88(1): 209-224, 2 figs. July 1972. *WR 147: 114*
[Univ. Utah, Salt Lake City.] Abstract: A population of *Coleonyx variegatus* was studied during 1965-66 at a low-altitude Sonoran Desert mountain range. Seasonal activity extended from April through October, with intermittent activity during winter months. Mean distances between capture points ranged from 10.9 m for immature males to 43.7 m for immature females. Frequency of broken or regenerated tails was positively correlated with body length; in the largest size group 74.1% were broken. Growth rates varied from 9.7 mm/month in immature lizards to no discernible growth for large adults. Gravid females were found from April through September, occurring most frequently in May and June. Two or more clutches of two eggs each are produced annually. Males had enlarged testes from April through August. Hatchlings appeared from July through November. Many individuals of both sexes reached sexual maturity when less than 1 year old, but some did not mature until their 2nd year. Males were captured more frequently than females from January through May, perhaps indicating more extensive wanderings. An estimated 66% of the population was reproductive in May, the height of the breeding season. Among five study areas, abundance was highest on a S-facing slope. Population density in one area was estimated to be 12-25 geckos/ha.

Parker, William S. NOTES ON *DIPSOSAURUS DORSALIS* IN ARIZONA. *Herpetologica* 28(3): 226-229. Sept. 1972. *WR 147: 115*
[Univ. Utah, Salt Lake City.] Abstract: Marked immature desert iguanas were studied from 1964-1966 in the Sonoran Desert. Mean distance between captures was 14.1 m. Hatchlings emerged during a period of less than one month in August. Mean growth rate of 22 juvenile and immature lizards was 2.7 mm/month. At this growth rate, the minimum adult size would be attained at an age of about 38 months and the first reproduction would occur at 45 months. Sympatric carnivorous lizards grew 50-150% faster than the herbivorous desert iguana. Spring density of immatures was about 11/hectare, and late summer density of juveniles was 20/hectare.

Philibosian, Richard Fred. TERRITORIAL BEHAVIOR AND POPULATION REGULATION IN ANOLINE LIZARDS. *Ph.D. thesis, Univ. Calif.* (Riverside). 129 p. 1972. [From Diss. Abstr. Int. B Sci. Eng. 33(2), 1972.] *WR 147: 115*
Two allopatric and ecologically similar species of lizards, *Anolis cristatellus* and *A. acutus*, exist at two different population densities.--From abstr.

Pianka, Eric R., and William S. Parker. ECOLOGY OF THE IGUANID LIZARD *CALLISAURUS DRACONOIDES*. *Copeia* 1972(3): 493-508, 7 figs. 8 Sept. 1972. *WR 147: 115*
[Univ. Tex., Austin.] Various aspects of the life history of *Callisaurus* are described and discussed, including: movements, microhabitat, foraging behavior, diet, size, growth, age, population structure, reproduction, sexual dimorphism, sex ratio, abundance, thermoregulation, time of activity, tail loss and predation, and leg length.--From abstr.

Post, Douglas Delray. SPECIES DIFFERENTIATION IN THE *RANA PIPIENS* COMPLEX. *Ph.D. thesis, Colo. State Univ.* 152 p. 1972. [From Diss. Abstr. Int. B Sci. Eng. 33(2), 1972.] *WR 147: 115*

Powers, Arnold. AN INSTANCE OF CANNIBALISM IN CAPTIVE *CROTALUS VIRIDIS HELLERI* WITH A BRIEF REVIEW OF CANNIBALISM IN RATTLESNAKES. *Bull. Md. Herpetol. Soc.* 8(3): 60-61. Sept. 1972. *WR 147: 115*
[U.S. Int. Univ., Elliott Campus, San Diego, Calif.]

Quay, W. B. SEXUAL AND RELATIVE GROWTH DIFFERENCES IN BRAIN REGIONS OF THE TURTLE *PSEUDEMYS SCRIPTA* (SCHOEPFF). *Copeia* 1972(3): 541-546, 2 figs. 8 Sept. 1972. *WR 147: 115*
[Univ. Calif., Berkeley.]

Rainey, William E., and Peter C. H. Pritchard. DISTRIBUTION AND MANAGEMENT OF CARIBBEAN SEA TURTLES. *Trans. N. Am. Wildl. Nat. Resour. Conf.* 37: 135-145. 1972. *WR 147: 115*
[Caribbean Res. Inst. Coll. Virgin Islands, St. Thomas, Virgin Islands.] *"Lepidochelys olivacea, Dermochelys coriacea, Caretta caretta, Eretmochelys imbricata* and *Chelonia mylas."*

Ralin, Dennis B., and James S. Rogers. ASPECTS OF TOLERANCE TO DESICCATION IN *ACRIS CREPITANS* AND *PSEUDACRIS STRECKERI*. *Copeia* 1972(3): 519-525. 8 Sept. 1972. *WR 147: 115*
[Univ. Industrial de Santander, Bucaramanga, Colombia.] Ecological and life history data in the literature indicate that *Acris crepitans* is one of the most aquatic of North American hylids, and that *Pseudacris streckeri* is one of the most terrestrial.--From abstr.

Rand, A. Stanley. THE TEMPERATURES OF IGUANA NESTS AND THEIR RELATION TO INCUBATION OPTIMA AND TO NESTING SITES AND SEASON. *Herpetologica* 28(3): 252-253. Sept. 1972. *WR 147: 115*
[Smithsonian Tropical Res. Inst., Balboa, Canal Zone.] Abstract: The temperatures at which iguana eggs were incubating in natural nests were measured and found to be 31-32 C. This approximates the optimum incubation temperature of

30 C as determined in laboratory experiments by Licht and Moberly (1965). Comparison with soil temperatures suggest that this temperature is important in determining both nesting site and season, and these factors may influence iguana distribution.

Rao, M. V. Subba, and B. S. Rajabai. ECOLOGICAL ASPECTS OF THE AGAMID LIZARDS *SITANA PONTICERIANA* AND *CALOTES NEMORICOLA* IN INDIA. *Herpetologica* 28(3): 285-289. Sept. 1972. *WR 147: 116*
[Utkal Univ., Cuttick-3, Orissa, India.]

Rau, R. CAPE RESERVE FOR ONE OF WORLD'S RAREST TORTOISES. *African Wild Life* 25(3): 95-96, illus. 1971. [From Biol. Abstr. 54(4), 1972.] *WR 147: 116*
"Testudo geometrica."

Reagan, Douglas P. ECOLOGY AND DISTRIBUTION OF THE JEMEZ MOUNTAINS SALAMANDER, *PLETHODON NEOMEXICANUS*. *Copeia* 1972(3): 486-492, 3 figs. 8 Sept. 1972. *WR 147: 116*
[Univ. Ark., Fayetteville.] Abstract: Field studies involving *Plethodon neomexicanus* were made from September, 1965 to March, 1967. This species is limited to north facing slopes and steep canyons within the upper montane forest (2420-2800 m) of the Jemez Mountains, Sandoval County, New Mexico. *P. neomexicanus* maintains burrows among the rocks of talus slopes and moves easily through them. Salamanders are active at the surface at temperatures from 10.5 to 13.0 C with the surface dripping wet. Gut analysis revealed that they eat a variety of invertebrates including large numbers of ants. Intestinal nematodes, *Thelandros salamandrae*, were found in 41% of the specimens examined. Salamanders reach sexual maturity at a total length of 98 mm in males and 104 mm in females. Total and S-V length are significantly greater in females than in males. Mean clutch size was estimated at 7.7, range 5-12. *P. neomexicanus* appears to deposit eggs during late July and early August. Testes weights increase from June to September while salamanders are active at the surface. Salamanders were not accessible at other times. Collections from five new localities extended the known geographic range 19 km.

Ross, Arnold, and Crawford G. Jackson, Jr. BARNACLE FOULING OF THE ORNATE DIAMONDBACK TERRAPIN, *MALACLEMYS TERRAPIN MACROSPILOTA*. *Crustaceana* 22(2): 203-205, illus. 1972. [From Biol. Abstr. 54(3), 1972.] *WR 147: 116*
[Nat. Hist. Mus., P.O. Box 1390, San Diego, Calif.]

Ruibal, Rodolfo, Richard Philibosian, and Janet L. Adkins. REPRODUCTIVE CYCLE AND GROWTH IN THE LIZARD *ANOLIS ACUTUS*. *Copeia* 1972(3): 509-518, 6 figs. 8 Sept. 1972. *WR 147: 116*
[Univ. Calif., Riverside.] Abstract: *Anolis acutus* is an endemic species and only anole on the island of St. Croix, U.S. Virgin Islands. A high percentage of ovigerous females are present during most of the year, with January thru April being the months of lowest reproductive potential. However, even during these months ovigerous females may exceed 50% of the adult females. Reproduction can take place during all twelve months of the year. Maximum testes size occurs from June thru October. In females fat bodies were rarely large, and were smallest during the dry season (December-April). Fat body size showed no temporal pattern in the males. Maximum reproductive potential is correlated with months of high rainfall, and the lowest reproductive potential with months of low rainfall. Females lay a single egg at a time. Eggs range from 10.7-11.4 mm long and 7.4-8.6 mm wide and are buried in sandy or gravelly soils. Fourteen days after laying eggs weigh 0.32 g. Hatching occurs in about 30 days at 28 C. Hatchlings are 19-21 mm snout-vent and weight 0.21-0.30 g. The average growth rate of juveniles is 0.07 mm/day, of females it is 0.06 mm/day, and of males, 0.11-0.14 mm/day. Females apparently reach sexual maturity in less than a year and males in about one year. Minimum size of sexually mature females is 36 mm snout-vent, and their maximum size is 49 mm. Males appear to reach sexual maturity at about 50 mm snout-vent and reach a maximum size of 67 mm.

Salvador, A., J. Castroviejo, S. Castroviejo, J. Garzon-Heydt, M. Meijide, and M. G. De Viedma. PRIMERAS NOTAS SOBRE LA HERPETOFAUNA DEL MACIZO IBERICO SEPTENTRIONAL. [FIRST NOTES ON THE HERPETOLOGIC FAUNA OF THE NORTHERN IBERIAN MASSIF.] *Bol. Roy. Soc. Esp. Hist. Nat. Secc. Biol.* 68(3/4): 123-133, illus. 1970. [From Biol. Abstr. 54(4), 1972. In Spanish with English summ.] *WR 147: 117*
[Esc. Tec. Super. Ing. Montes, Madrid, Spain.]

Samarina, B. F. [DATA ON THE ECOLOGY OF THE GRASS SNAKE.] *Ekologiya* 1(3): 89-90. 1970. [From Biol. Abstr. 54(4), 1972. In Russian.] *WR 147: 117*
[Oksk State Reserve, Oksk, USSR.] *"Natrix natrix."*

Schaefer, N. A RECORD-SIZED *CHAMELEO DILEPIS* (CHAMELEONTIDAE) FROM SOUTHERN AFRICA. *Mem. Inst. Invest. Cient. Mocambique Ser. A (Cienc. Biol.)* 2: 169-176, 6 figs. 1971. *WR 147: 117*

Schneider, Hans. DIE STEUERUNG DES TAEGLICHEN RUFBEGINNS BEIM LAUBFROSCH, *HYLA ARBOREA ARBOREA* (L.). [THE CONTROL OF THE DAILY ONSET OF CALLING ACTIVITY IN THE TREE FROG, *HYLA ARBOREA ARBOREA* (L.).] *Oecologia* (Berlin) 8(3): 310-320, illus. 1971. [From Biol. Abstr. 54(1), 1972. In German with English summ.] *WR 147: 117*
[Univ. Bonn, Bonn, Germany.]

Schwartz, Albert. A NEW SUBSPECIES OF *SPHAERODACTYLUS DECORATUS* (SAURIA, GEKKONIDAE) FROM THE BAHAMA ISLANDS. *Herpetologica* 28(3): 247-251. Sept. 1972. *WR 147: 117*
[Miami-Dade Univ., Miami, Fla.] Abstract: A new subspecies of the Antillean gecko *Sphaerodactylus decoratus* Garman is described from the Ragged Islands, which lie on the southern portion of the Great Bahama Bank and close to Cuba. A brief analysis of variation within the species is presented in an attempt to account for distribution of the various Bahaman subspecies in reference to the parent Cuban populations.

Seymour, Roger S. BEHAVIORAL THERMOREGULATION BY JUVENILE GREEN TOADS, *BUFO DEBILIS*. *Copeia* 1972(3): 572-575. 8 Sept. 1972. *WR 147: 117*
[Monash Univ., Clayton, Victoria, Australia.]

Shchupak, E. L. [DYNAMICS OF THE BIOLOGICAL PRODUCTIVITY OF *RANA ARVALIS*.] *Ekologiya* 1(1): 83-86, illus. 1970. [From Biol. Abstr. 54(5), 1972. In Russian.] *WR 147: 117*
[Inst. Plant Anim. Ecol., Ural Branch, Acad. Sci. USSR, Sverdlovsk, USSR.] The main conclusion following an analysis of the data is that the biomass of the frogs emerging into the land is commensurate with the biomass of the eggs deposited in the pond.

Shuntov, V. P. [SEA SNAKES OF THE NORTH AUSTRALIAN SHELF.] *Ekologiya* 2(4): 65-72, illus. 1971. [From Biol. Abstr. 54(6), 1972. In Russian.] *WR 147: 117*
[Pac. Res. Inst. Mar. Fish Oceanogr., Vladivostok, USSR.] Some characteristics of the species composition, distribution, and abundance of sea snakes (Serpents, Hydrophidae) on the shelf of the northern coast of Australia were determined on the basis of visual observations and a count in trawl catches of fishing boats in 1967-1970.

Sikmashvili, N. M. [INFORMATION FOR THE STUDY OF THE FOOD OF THE AMPHIBIANS AND REPTILES IN THE TSALKA AND DMANISI DISTRICTS.] *Soobshch. Akad. Nauk Gruz. SSR* 63(2): 461-463. 1971. [From Biol. Abstr. 54(2), 1972. In Russian with English summ.] *WR 147: 117*
The contents of stomachs of 245 amphibians of 4 spp. and 140 stomachs of reptiles of 10 spp. were examined.

Sindyukov, A. P. [DETERMINATION OF THE FATNESS OF BLUNT-NOSED VIPERS.] *Ekologiya* 2(4): 101-103. 1971. [From Biol. Abstr. 54(6), 1972. In Russian.] *WR 147: 118*
[Inst. Zool. Parasitol., Acad. Sci. Uzb. SSR, Tashkent, USSR.] *"Viper lebetina."*

Smith, Gary C., and David Watson. SELECTION PATTERNS OF CORN SNAKES, *ELAPHE GUTTATA*, OF DIFFERENT PHENOTYPES OF THE HOUSE MOUSE, *MUS MUSCULUS*. *Copeia* 1972 (3): 529-532. 8 Sept. 1972. *WR 147: 118*
[Savannah River Ecol. Lab., Drawer E, Aiken, S.C.]

Spano, Silvio. NOTA SU *RANA BECCARII* BLGR. IN ERITREA. [NOTE ON *RANA BECCARII* BLGR. IN ERITREA.] *Doriana* 4(197): 1-7, illus. 1971. [From Biol. Abstr. 54(4), 1972. In Italian with English summ.] *WR 147: 118*
[Univ. Genoa, Genoa, Italy.] Ecological and morphological data are given.

Stemmler, Othmar. EIN BEITRAG ZUR KENNTNIS DER FORMEN VON *BLANUS CINEREUS* (VANDELLI) (REPTILIA, AMPHISBAENIA, AMPHISBAENIDAE). [A CONTRIBUTION TO THE KNOWLEDGE OF THE FORMS OF *BLANUS CINEREUS* (VANDELLI) (REPTILIA, AMPHISBAENIA, AMPHISBAENIDAE).] *Rev. Suisse Zool.* 78(4): 783-791, illus. 1971. [From Biol. Abstr. 54(6), 1972. In German with English and French summ.] *WR 147: 118*
[Naturhist. Mus., Basel, Switzerland.]

Stockem, Wilhelm. FEINSTRUKTUR UND MORPHOGENESE DER EPIDERMISOBERFLAECHE VON AMPHIBIEN. [FINE STRUCTURE AND MORPHOGENESIS OF THE EPIDERMAL SURFACE IN AMPHIBIANS.] *Verh. Dtsch. Zool. Ges.* 64: 123-126, illus. 1970. [From Biol. Abstr. 54(4), 1972. In German with English summ.] *WR 147: 118*
[Univ. Bonn, Bonn, Germany.]

Sulgostowska, Teresa. SOME PARASITES OF GREEN SNAKE *NATRIX NATRIX* (L.) FROM WARSZAWA ENVIRONMENT. *Acta Parasitol. Pol.* 19(29-41): 357-359. 1971. [From Biol. Abstr. 54(1), 1972. In English with Polish summ.] *WR 147: 118*
[Univ. Warsaw, Warsaw, Poland.]

Tertyshnikov, M. F. [FEEDING OF THE VARIEGATED LIZARD *(EREMIAS ARGUTA DESERTI* GMEL., 1788) IN CENTRAL CISCAUCASIA.] *Ekologiya* 1(4): 91-96, illus. 1970. [From Biol. Abstr. 54(5), 1972. In Russian.] *WR 147: 118*
[Stavrop. Pedagog. Inst., Stavropol, USSR.] The feeding spectrum of *E. arguta deserti* was established on the basis of an analysis of the contents of 172 stomachs.

Tilley, Stephen G. ASPECTS OF PARENTAL CARE AND EMBRYONIC DEVELOPMENT IN *DESMOGNATHUS OCHROPHAEUS*. *Copeia* 1972(3): 532-540, 1 fig. 8 Sept. 1972. *WR 147: 118*
[Smith Coll., Northampton, Mass.]

Trueb, Linda. PHYLOGENETIC RELATIONSHIPS OF CERTAIN NEOTROPICAL TOADS WITH THE DESCRIPTION OF A NEW GENUS (ANURA: BUFONIDAE). *Los Angeles County Mus. Contrib. Sci.* 216. p. 1-40, illus. 1971. [From Biol. Abstr. 54(4), 1972. In English with Spanish summ.] *WR 147: 118*
[Univ. Kans., Lawrence.]

Valentine, Jacob M., Jr., John R. Walther, Keith M. McCartney, and Larry M. Ivy. ALLIGATOR DIETS ON THE SABINE NATIONAL WILDLIFE REFUGE, LOUISIANA. *J. Wildl. Manage.* 36(3): 809-815. July 1972. *WR 147: 118*
[Bur. Sport Fisheries & Wildl., Lafayette, Ind.] Abstract: A total of 413 alligator *(Alligator mississippiensis)* stomachs collected in 1961, 1962, and 1964 from Sabine National Wildlife Refuge, Louisiana, were examined for food contents. Crustaceans and fishes were important food for alligators of all sizes. Reptiles and birds ranked fairly high in the diets. Fluctuations in mammal populations were reflected in the alligator food habits. Muskrats *(Ondatra zibethicus)* rated high as food in 1946, and nutria *(Myocaster coypus)* rated high in 1961.

Van Dijk, D. E. THE ZOOCARTOGRAPHIC APPROACH TO ANURAN ECOLOGY. *Zool. Africana* 6(1): 85-118, illus. 1971. [From Biol. Abstr. 54(5), 1972.] *WR 147: 119*
[Univ. Natal, Pietermaritzburg, South Africa.] Abstract: An assessment of the limitations of this method and to show how zoocartographic correlations can be checked by a more direct method of correlation of variables and locality records are discussed. The chief disadvantage of the zoocartographic approach is considered to be that it involves the manipulation of a mass of data with frequent opportunities for error, and that even minimal errors tend to render conclusions questionable.

Van Dijk, D. E. ANURAN ECOLOGY IN RELATION PARTICULARLY TO OVIPOSITION AND DEVELOPMENT OUT OF WATER. *Zool. Africana* 6(1): 119-132, illus. 1971. [From Biol. Abstr. 54(6), 1972.] *WR 147: 119*
[Univ. Natal, Pietermaritzburg, South Africa.]

Witten, Geoffrey J. A NEW SPECIES OF *AMPHIBOLURUS* FROM EASTERN AUSTRALIA. *Herpetologica* 28(3): 191-195, 5 figs. Sept. 1972. *WR 147: 119*
[Univ. New England, Armidale, New South Wales, Australia.] Abstract: A new species, including two subspecies (*Amphibolurus nobbi nobbi* and *Amphibolurus nobbi coggeri*), of the agamid genus *Amphibolurus* is described from eastern Australia. The species is distinguished from its nearest known relative (*Amphibolurus muricatus*) by the presence of a lower number of dorsal scale rows and a lack of heterogeneity of the dorsal and lateral scutellation. A map of the geographic range of *A. muricatus* and the two new forms is presented.

Woodruff, David S. AMPHIBIANS AND REPTILES FROM SIMBAI, BISMARCK-SCHRADER RANGE, NEW GUINEA. *Mem. Natl. Mus. Victoria* 33. p. 57-63, illus. 1972. [From Biol. Abstr. 54(6), 1972.] *WR 147: 119*
[Harvard Univ., Cambridge, Mass.]

Wyman, Richard L., and James H. Thrall. SOUND PRODUCTION BY THE SPOTTED SALAMANDER, *AMBYSTOMA MACULATUM*. *Herpetologica* 28(3): 210-212, 1 fig. Sept. 1972. *WR 147: 119*
[Ill. State Univ., Normal.]

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Manuscript for this issue was completed 20 April 1973

* U. S. GOVERNMENT PRINTING OFFICE : 1973 O - 501-776

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As the Nation's principal conservation agency, the Department of the Interior has basic responsibilities for water, fish, wildlife, mineral, land, park, and recreational resources. Indian and Territorial affairs are other major concerns of this department of natural resources.

The Department works to assure the wisest choice in managing all our resources so that each shall make its full contribution to a better United States now and in the future.

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